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**Total Quality Management Framework
for Libyan Process and Manufacturing Industries**

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ABSTRACT

There are many challenges facing Libyan process and manufacturing industries in today's competitive market. One of these major challenges is the ability of Libyan companies to effectively introduce quality management approaches such as Total Quality Management (TQM) that can empower their people and improve their ability to respond to international competition.

The main aim of this study was to identify the drivers and barriers to the adoption of TQM in Libyan process and manufacturing industry and to develop a model through which Libyan companies could implement and maintain improved quality systems.

To achieve this aim, the research approach adopted both quantitative and qualitative methods. A generic framework of the critical success factors for implementing TQM was developed from the literature and endorsed by practitioners and experts in the field. Structured questionnaires were utilized to elicit the opinions of 400 managers from the Libyan process and manufacturing industries regarding the extent of quality management initiatives implemented in these companies. Semi-structured interviews were then used to identify managers' opinions about the topics related to TQM implementation in companies in Libya and the United Arab Emirates (UAE).

The research indicates a low level of critical TQM success factors within the Libyan companies, mostly caused by a minimal awareness of TQM philosophy, methods and tools, especially among top management. It also indicates that quality initiatives and practices in Libyan companies are still in the early stages and most of the companies studied were proceeding with quality improvement programmes without a well-defined vision and objectives.

Based on these results the original TQM framework was modified for use within Libyan process and manufacturing industries. The framework propagates an approach to implementation incorporating top-down deployment and bottom-up participation. It

prescribes guidelines for introducing TQM in four phases and is designed to help Libyan companies get started and move step-by-step towards a TQM culture.

Moving from one phase to the next depends upon the harnessing of knowledge and expertise gained during the previous phase and fulfilling each phase assessment criteria.

The implementation of this model will work faster and more efficiently if there is strong commitment from the top management and employees within the Libyan companies.

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Praise to Allah, who has guided me through to this and has given me the good health and the strength of determination to enable me to carry out this work.

I decided to do this study in the field of quality management, because the more I study the subject of quality the more I discover that quality management (Itqan management) can help my society to overcome the inherited culture of poor quality which prevents people from moving towards a better standards of living and a better quality of life.

I would like to thank my supervisor Dr. Mark Lemon for his generous help and guidance throughout this process. I would also like to thank my previous supervisors, Professor John Rogerson and Dr. Peter Dickenson.

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This chapter provides an overview of the thesis. It describes the background to the research area, research problem, research questions, research main purpose and motivations, objectives and research methodology. It also describes the significance of the present study and the structure of the thesis.

Chapter 1

1 INTRODUCTION

1.1 Background

At the beginning of the twenty-first century, the creation of the global market, the international paradigms of management that cross national boundaries, the new information revolution, the introduction of new technologies, and the shift towards customer-focused strategies have made competition stronger than ever (Porter, 1985; 1999; Go and Govers, 2000). Organisations and governments can no longer perform their functions with bureaucratic rules, inadequate resource planning, or inefficient managerial approaches. They are challenged by the need for a better quality of products, services, improved performance standards, and greater responsiveness in order to be competitive in the global market.

Quality has been an important issue for organisations for many years. The early focus on quality evolved from inspection to quality control and later to quality assurance, according to Dale (1999), during the 1990s, TQM evolved as a common term among organisations in different parts of the world. TQM has developed in many countries into an holistic framework (e.g. National quality or internationally recognized awards such as the Deming award, MBNQA and EFQM) aimed at helping organizations achieve excellent performance, particularly in customer and business results.

In order to gain and sustain competitiveness in the global market, companies in developed and developing economics need to transform their traditionally bureaucratic style of management to a high value-added and proactive one. For such a transformation the adoption of effective quality strategies and practices is considered as one of the crucial factors for success. The shift from traditional management to a TQM culture is revolutionary and should come after profound thinking about what is involved during every stage of the transformation. .

Most developing countries are not prepared for these challenges of the new globalising world. But some of developing countries (e.g. Singapore, Malaysia, Taiwan, Dubai) which have introduced quality management as a competitive advantage government has provided facilities and a policy environment (e.g. privatization, physical infrastructure, institutional support and formulation of coherent policies) to support the transformation and enable entrepreneurship. Without political ownership in terms of commitment to the process, policy reforms could not be sustained.

Organizational change often requires cultural change to achieve a flexible, dynamic, and adaptable environment, where all organization members participate in problem solving, value adding results and corporate success. (Morgan, 1997). This is where Total Quality Management makes an impact. However, to be successful in the introduction of TQM, many attitudes need changing, thinking developed and perceptions broadened. As a result standards can be set and organization-wide commitment and continuous improvement realized. The necessary changes will not happen without planned, purposeful action.

1.2 Research Problem

In terms of integration with the rest of the world, and improving the quality and standards of the products, the Libyan economy still lags behind other developing economies in East Asia, South Asia, Latin America and the UAE. The Business Competitiveness Index (BCI), a powerful tool that measures the sophistication of companies, their operations, and the quality of the business environment, ranked Libya in 110th position, with only Paraguay ranking lower.

Libyan Process and Manufacturing Companies (LPMC) (hereafter called Libyan companies) today face many difficult challenges if they are to survive fierce competition from other international companies. These challenges include being able to sell their products faster, more cheaply, and with a higher level of quality than their competitors. Libyan companies generally suffer from a lack of vision, poor leadership, waste of expensive resources, disregard for the potential of human resources as an important agent for change, overlooking customers, and the absence of a scientific, systematic approach towards organizational management. All of these challenges are preventing the country from developing (CERA, 2005).

In most Libyan companies there is an absence of a well structured auditing management system, and no inspection mechanisms exist for the assessment of the quality of products and the services provided. Suppliers in this culture are insensitive to the needs of their customers and the general public. Irrespective of Libyan companies' poor performance and poor quality, survival is ensured by the state. The state has been the centre of power for more than 35 years and there has generally been no accountability on performance, either good or bad, at the sector or organizational level. Most government organizations have performed poorly and there is a mounting concern over unemployment rates, which average more than 20% according to the last manpower survey (GPC., 2005; NES, 2005).

During the 1970s, a lot of money was spent on building up an elaborate infrastructure to facilitate independence in different areas (e.g., food, education, industry, health and

transportation). This effort was unsuccessful because the culture that was needed to change the attitudes of the people towards the new changes was not there. Nowadays, there is an urgent need for a radical reappraisal of traditional management practices within Libyan companies and large-scale change and transformation in the way in which business is done in the Libyan environment, particularly in the area of quality management (Youseef et al., 2005).

In response to the challenges that Libyan companies are facing, Total Quality Management (TQM) could be the key to competitive advantage in today's business environment (Drucker, 2001; Juran, 1995). TQM has been described by quality experts (Crosby, 1979; Dahlgaard et al., 2002; Deming, 1982; Ghobadian and Gallear, 2001,1997; Hansson, 2003; Zairi, 2002; Rahman, 2004) as a management philosophy and a way of thinking that has helped many organizations in developed and developing countries towards achieving world-class status. TQM can derive a competitive advantage in the marketplace as well as in operational processes. It emphasizes lowering costs by reducing waste, variation, helping suppliers provide quality products and satisfying the customer with quality goods and services (Deming, 1986; George, 2002; Van Horn, 1997). TQM helps to create a culture of trust, participation, and teamwork oriented towards continuous improvement.

A radical forward step needs to be taken to improve the quality standards of Libyan companies and aim for better productivity and quality of life. If they are not able to do so, they will inevitably go out of business because no one will buy their products or services.

1.2.1 Identification of the Research Problem

“Well begun is half done” --- Aristotle

Sekaran (2003) defines a research problem as “any situation where a gap exists between the actual and desired state” (112). According to Sekaran experience is the best basis for responding to practical problems. The research focus of this study comes from the day-to-day management problems in Libyan manufacturing companies, caused mainly by

the absence of quality implementation in the Libyan context. Figure 1-1 shows how the study problem was defined.

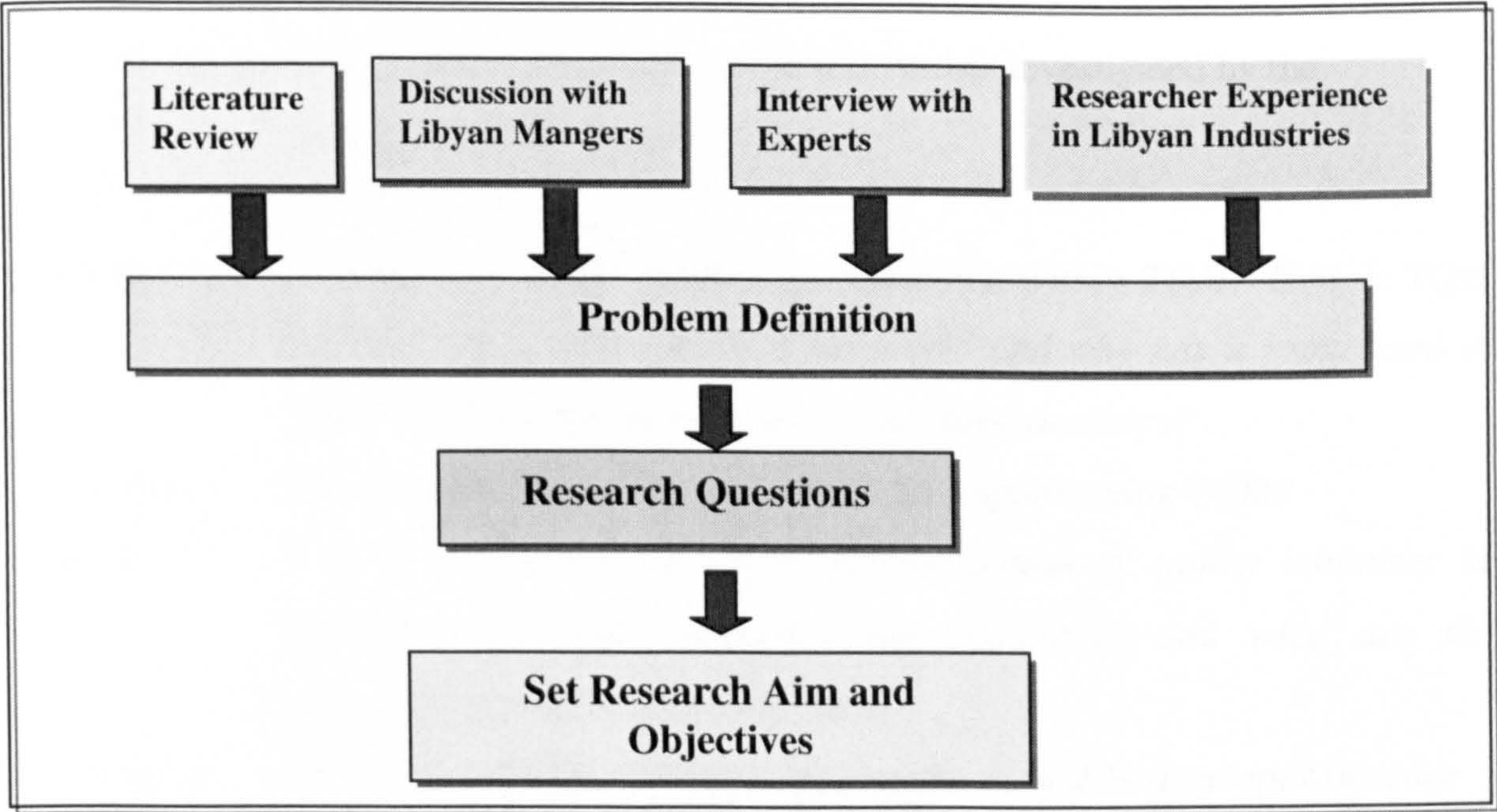


Figure 1-1: Research problem definition

Based on the researcher’s experience with the Libyan oil industry, and after an extensive literature review and discussions with professionals who have considerable practical experience in the same field, the following broad research problem was identified and will be addressed by this thesis.

- *To establish the extent to which the concepts of Total Quality Management, (TQM) and Quality Management Systems (QMS) can help Libyan manufacturing companies overcome their managerial problems and improve productivity.*
- *To define what kind of TQM implementation model should be developed in order to guide Libyan manufacturing companies in implementing TQM.*

1.3 Research Questions

Bearing the above in mind, the research problem is further investigated by the
Answering following specific questions:

- Question 1: *What is the overall business performance within TQM? How is TQM implemented in other parts of the world and why has it progressed in some countries and organizations and failed in others?*
- Question 2: *What are the critical success factors for implementing TQM?*
- Question 3: *What is the current status of implementation of quality initiatives in Libyan process and manufacturing companies and what are the difficulties and barriers facing them?*
- Question 4: *What kind of TQM implementation model should be developed in order to guide Libyan companies in implementing TQM?*

These questions set the parameters for the research project and determined the methods to be used for data gathering and analysis

1.4 Study Motivations

Libyan process and manufacturing companies are rapidly falling behind the rest of the world, especially in the field of applications of management approaches. Possible reasons could be:

- Lack of awareness and poor knowledge of standards and quality, and absence of performance measures;
- Local standards are often incomplete, or incompatible with international standards;
- There is a shortage of skilled managers and a very limited implementation of

quality management tools such as ISO 9000, ISO 14000, Six Sigma and HAACP, or other quality techniques such as process management, policy deployment, benchmarking, self-assessment or quality function deployment;

- There is a lack of expertise to identify target consumers and attract them to buy their products;
- Lack of government initiative to promote quality among society.

Irrespective of poor quality survival is ensured by the state

Today because of the globalization pressure from the World Trade Organisation (WTO), and opening the country to international competition, Libya as a country and Libyan companies specifically, are facing severe international competition. If something is not done soon to improve quality standards in these companies, industry will inevitably suffer.

Personal motivations

The researcher (being part of aforementioned Libyan industrial culture) witnessed the waste of expensive resources, the failure of major and minor development plans, and human resources as an agent for change being ignored. Libyan industries continued in the loop of a vicious circle, while poorer developing countries made radical changes and became developed countries that could compete in the global arena for a better quality of life (Singapore, Malaysia, India and South Korea). As a result, the researcher felt it was appropriate to investigate the level of TQM implementation in Libyan manufacturing companies to identify the barriers they faced that prevented them from improving. Building on the research findings and considering other countries' experiences, the researcher tried to develop a simple practical model for implementation and maintenance of TQM. The researcher anticipates that implementing this model would help Libyan managers to make significant changes in their management philosophy, attitudes and behaviour.

1.5 Research Aim and Objectives

In order to respond to the research questions outlined above the main aim of this study is:

To identify the drivers and barriers to the adoption of TQM in Libyan process and manufacturing industry and to develop a model through which Libyan companies could implement and maintain improved quality systems.

Specific objectives have been identified to achieve this aim. These objectives are

- To identify the critical success factors that lead to the effective implementation of TQM.
- To investigate the present status of TQM or other quality management systems among Libyan companies and determine the difficulties they are facing in improving their quality position, which is preventing them from being competitive.
- To learn from best practices and to develop an appropriate TQM model for Libyan process and manufacturing companies to create a quality culture in which to compete locally and globally.

With these objectives in mind, the researcher developed the research methodology through which the investigation was to be conducted.

1.5.1 Research Methodology

Eight factors have been identified as critical for the successful TQM approach in the Libyan process and manufacturing environment. These are based on an extensive study

of previous research on TQM, and by combining quality professionals' philosophies, empirical surveys, case studies, quality awards, ISO 9000, and seeking industrial experts' opinions in the Libyan industry, eight factors have been identified as critical for the successful TQM approach in the Libyan process and manufacturing environment. For each of the eight factors, a number of items related to Libyan industrial culture were carefully formulated (total 52 items) to measure the level of implementation for each factor using the survey questionnaire see Table 4-2 , while semi-structured interviews were conducted to answer some of the 'why?' and 'how?' questions to help enrich, interpret and understand the quantitative data and to investigate the impact of introducing quality management systems, the difficulties, methods and tools used, and the level of support from decision-makers to back up the quality movement in companies in Libya and the United Arab Emirates (UAE). The overall aim of using mixed methods was to make the research findings more reliable and valid, and to reduce the level of inherent bias by comparing sets of data, i.e. "data triangulation".

The questionnaire was reviewed by an expert panel of university faculty and experts from industry for content validity. The instrument was then pilot tested among a group of individuals who represent the targeted sample within the Libyan industry. Input received from the pilot test group and the expert panel was incorporated into the final survey. A commonly used technique, internal consistency analysis, was employed in this research to measure the reliability of the survey instrument.

The respondents included 400 employees from Libyan companies who have more than eight years of job experience. They were line managers, middle managers, senior managers, trainers, supervisors, engineers and technicians with the required experience who were supposed to be familiar with the quality improvement strategies being implemented in their organisations, believing that their experience and insight was vital in shaping the journey towards TQM. Respondents were asked to rate the extent these items have been practised in their organisation, using a ten-point Likert scale.

Analysis of the data from the quantitative and the qualitative research indicated a low level of TQM Critical Success Factors (CSF) implementation and awareness of quality management approaches, especially among top management. In addition, the results of

the analysis showed that Libyan companies are still in the early stages of TQM, and most of the companies interviewed were proceeding with quality improvement programmes without a well-defined quality vision and objectives.

Details about the survey design, data collection and analysis, population and sample selection processes are included in the methodology section, which is in Chapter 5. A discussion of the overall findings is included at the end of Chapter 8.

1.6 Significance of the Study

The study is significant for a variety of reasons.

- Libya is in the process stage of transformation from a very closed system, where there is a clear lack of strategy, lack of knowledge of modern management approaches, poor policies, lack of incentives, etc., to an open system, where the competition will be very severe. Libyan organizations in their current situation would not cope with the fast changing movement of international organizations that have already swept the local market. The proposed framework, or road map, for TQM implementation was introduced by the researcher as a result of the findings from this study and comparison of international TQM best practices. If the proposed framework is adopted and adapted to suit the Libyan companies' circumstances and resources, it will help them to make a smooth transformation from their old bureaucratic management style to being open and flexible organizations in which they can better compete locally and internationally.
- The study could enhance the thinking of the government's decision-makers and top management in Libyan companies to adopt and adapt TQM principles to create a better management style which will enable them to compete locally and internationally.
- The current study, to the best of the researcher's knowledge, is the first to investigate the level of TQM implementation in Libya and the first that

compared or benchmarked quality management initiatives in Libyan companies (which still have a lot to do to establish quality management) and UAE companies (which are successful in quality, are recognized champions, and won the Dubai Quality Award). This comparison provides an excellent opportunity for Libyan companies to learn from other companies and to avoid many pitfalls in their way to the quality journey.

- Multiple methods of data collection within this study were used to ensure internal validity. These include a questionnaire and interviews so that the strengths of one source can compensate for the weaknesses in another.

1.7 Thesis Structure

The thesis consists of nine chapters, which relate to the various research objectives and the adopted research design. Chapter 1 presents the background, the motivations, aim and objectives of this study, the research problem, research questions, methodology, significance of the present study and the thesis structure. Chapter 2 provides the background to the Libyan demographic, economic, political and social culture, which could affect any attempt to change the state of the Libyan management approach to quality management. Chapter 3 presents a comprehensive literature review of previous efforts in the field of quality and describes the concept of TQM based on the literature from:

- Quality experts;
- Quality awards;
- Empirical studies.

The chapter starts by defining the concept of quality and goes on to explore the Total Quality Management approach--how it was initiated and developed by the quality leaders, empirical studies and models of excellence, how TQM succeeded in different parts of the globe (especially in the developing countries), and how it affects an

organization's performance. This chapter addresses research questions one, two, and three. Chapter 4 identifies the eight critical success factors for implementing TQM. These are based on the literature explored in Chapter 3, previous empirical studies, interviews with international experts in the field of quality, and opinions elicited from experts in Libyan manufacturing companies. Chapter 5 explains the research design and strategies, population and sample, research questions, data collection and analysis. Chapters 6 and 7 show how the quantitative and qualitative data were analyzed to realise the final results. Chapter 8 discusses the substantive findings from the previous three chapters and constructs the framework (roadmap) for TQM implementation in Libyan manufacturing companies. The final chapter concludes the thesis by summarizing the main findings and contributions. Limitations of the research and recommendations for further work are also presented.

1.8 Summary

This chapter has provided an overview of the thesis. After highlighting the background to the study, the research problem was stated, and the aim and objectives of the study were outlined. Based on those objectives, four research questions have been proposed and a research method designed to answer those questions and fulfil the research objectives. The chapter ended by discussing the significance of the present study and outlining the thesis structure.

The next chapter, chapter (2), will provide a diagnosis of the current Libyan context. (the current economic, political, cultural and demographical elements in Libya which could affect any quality improvement plans in the process and manufacturing sectors).

Building a consistent and upgrading program of development such as a TQM will require a coordinated effort between a number of diverse economic, cultural, political and demographic parties. This chapter aims to provide a diagnosis of the current Libyan context in order to assess the extent to which it offers appropriate responses in dealing with current or future issues.

Chapter 2

2 LIBYA..... WHERE TO?!

“Change takes place, no matter what deters it”.
(Plato, 428-347BC)

2.1 Introduction

As a result of globalisation and the start of preparations for jointing the World Trade Organisation (WTO), Libya will be competing with the rest of the world through the creation of conditions that will attract investments, both internationally and locally, in productive and competitive enterprises within its borders. Libya will be competing with the rest of the world by creating a structural, institutional and policy framework that will encourage and enable enterprises to constantly upgrade themselves and keep on improving productivity and competitiveness.

For any country to be competitive, government must create and sustain a domestic and international competitive environment that favours business operations and productivity in industrial and services sectors (Porter, 1999). Improving productivity and competitive

position are critical business issues to both individual organizations and nations. Improved productivity through quality approaches leads to a better standard of living, and an enhanced ability to compete ensures that the organization will survive to provide a secure future for its employees (Deming, 1986). According to Deming (1986) the appropriate implementation of quality management techniques will make an organization, an economic sector and eventually a country more competitive. From the experiences of the developed countries and especially in East Asia, Sheridan,(1997) pointed that it has become clear that close cooperation between government and civilian resources is an absolute necessity. Unfortunately this is not the case in Libya where civilian resources have been neglected for nearly twenty five years. Traditional government systems in Libya focus on centralized, bureaucratic service delivery and services are often monopolies and are not sensitive to customers' needs. To improve the quality of products and services, governments should shift to more demand-driven, decentralized systems of service delivery.

This Chapter will give a picture of the current economic, political, cultural and demographical elements in Libya which will affect any quality improvement plans in the manufacturing and other sectors. Section 2.2 of this Chapter provides some facts and figures about Libya. Sub-section 2.2.2 describes the population distribution. Subsection 2.2.3 describes the education system, its objectives and its level of quality to fulfil the workforce needs. Sub-sections 2.2.4 to 2.2.4.7 discuss different national economic issues including, the role of the private business; the role of the government in the local economy; the misuse of economic resources and USA and UN sanctions and how they affected the Libyan economy and development. Section 2.2.5 then describes the political system and how it supports or hinders the productivity and competitiveness of the country. The following sub-section 2.2.6 describes the Libyan culture (values and ethics) and how it relates to TQM implementation. The final section of the chapter 2.3 provides a summary of current economical, political, cultural and demographical elements in the Libyan context.

2.2 Libyan Socio-economic background

Libya is a country with unique values and a distinctive heritage. It possesses key strengths including an enterprising workforce, rich endowment of natural resources, accumulated capital reserves, and an attractive geographical location linking Europe to Africa, see Figure 2.1, (MBendi, 2006). Over the last few years Libya has made a deliberate choice to develop its prosperity by reintegrating with the international community, while preserving its unique identity. This choice requires deep reflection and analysis of national priorities so that the country can leverage its opportunities to generate and spread prosperity among all Libyans (CERA, 2005).

2.2.1 Libya - Facts and Figures

Libya is Africa's fourth largest country covering an area of 1,795,540 square kilometre (km²) (and with a coastline stretching 2,000 kilometres (km) along the southern Mediterranean. The country is surrounded by Egypt in the east (1,150 km); Sudan (383 km), Chad(1055 km) and Niger (354 km) in the south and Algeria (982 km), and Tunisia (459 km) in the West, see Figure 2.1,. A large portion of the country is desert, and the main cities and centres of population lie along the coast in the north of the country, where the main arable lands are located. Agriculture is also found in the Eastern Mountains and around the larger oases in the desert. Libya world ranking: 59th out of 162 countries (GPC, 2005).

The main religion is Islam and the main language is Arabic.

Total population: 5,900,754 includes 166,510 non-nationals (World Bank, 2005)

Gross Domestic Product (GDP) per capita: US\$, 11,070 (World Bank, 2005)

Climate: Libya's climate ranges from Mediterranean in the northern coastal region to semi-arid inland and arid in the desert south.

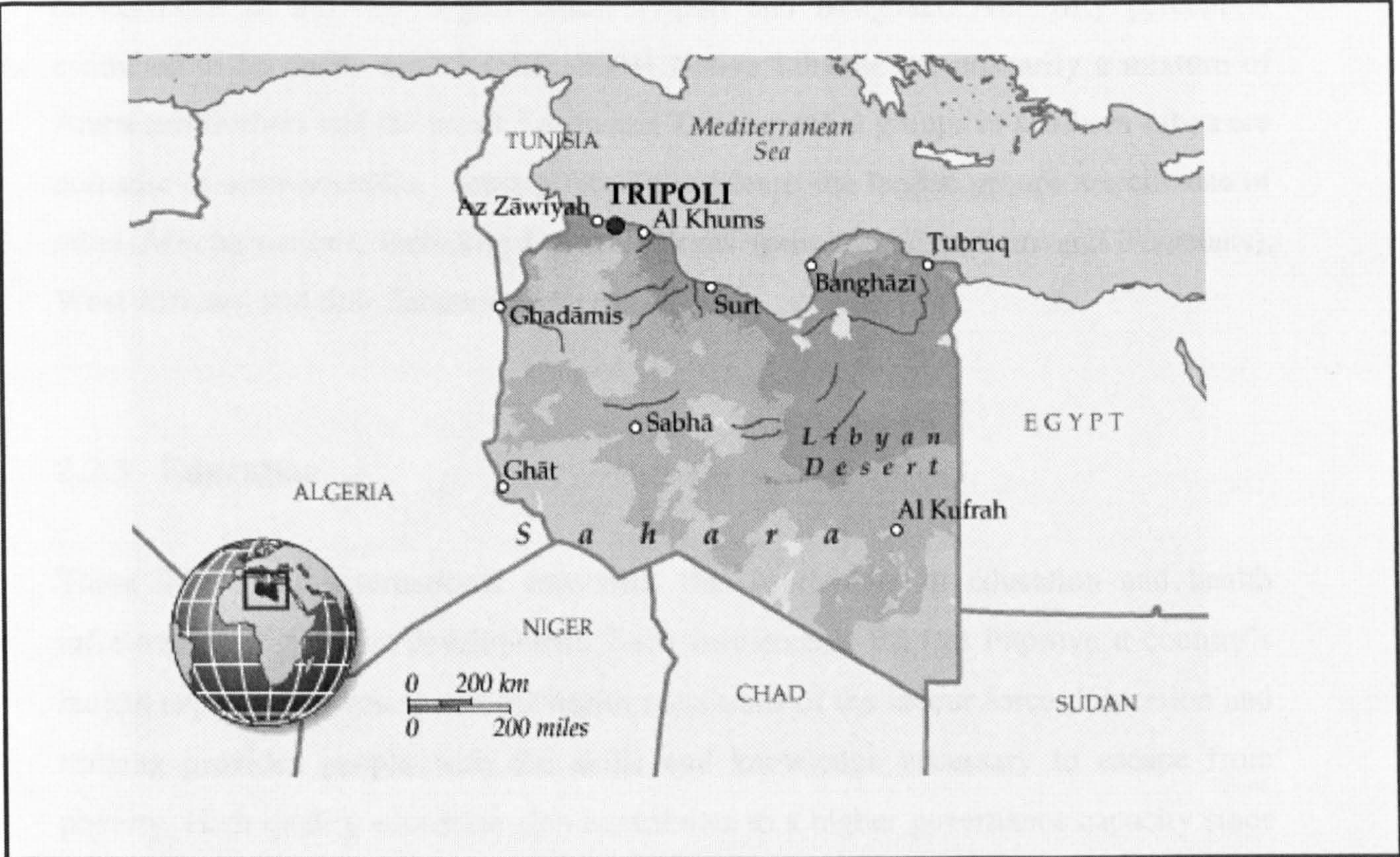


Figure 2-1: Libya location

Libyan faces an unprecedented series of demographic, economic, cultural, political, and globe’s challenges. It is important to understand how each of these affects the country’s future as a whole. These challenges also represent important opportunities for Libya, and require Libyan policy-makers and organizations top management to move beyond the status quo to create an even more focused and effective environment for change. To accept the present situation is to fall behind in the increasingly competitive world.

2.2.2 People

Libya has a small population, around six million people (page 14), (World Bank, 2005), in a large land area, where 90% of the people live in less than 10% of the area,

primarily along the coast, (1800 km) , More than half the population is urban, mostly concentrated in the two largest cities, Tripoli and Benghazi. And fifty percent is estimated to be under age 15 (SSF, 2004) Native Libyans are primarily a mixture of Arabs and Berbers and the small Tebou and Touareg tribal groups in southern Libya are nomadic or semi-nomadic. Among foreign residents, the largest groups are citizens of other African nations, including North Africans (primarily Egyptians and Tunisians), West Africans and Sub-Saharan Africans.

2.2.3 Education

There is a broad international consensus that investment in education and health infrastructure facilitates development. Such investments help to improve a country's human capital endowment and the health conditions of the labour force. Education and training provides people with the skills and knowledge necessary to escape from poverty. High quality education also contributes to a higher governance capacity since it provides citizens with knowledge and skills to participate in the governance of public affairs and improves the chances for an efficient and skilful management of reforms (UNESCO, 2005).

Two important goals of the Libyan education system during the 1970s, 1980s and 1990s were to contribute to the economic, social and cultural development of Libyan society, by improving skills and competencies, and to rapidly raise standards of human development in the society. This section assesses how Libya is performing in the pursuit of these goals.

Libya's public expenditure on education is approximately 4% of GDP, which is around the average for Middle East and North Africa (MENA) countries. Reported adult literacy levels are among the highest in the region at 82%; with youth literacy reaching 100% and female literacy considerably better than many MENA peers (MBendi, 2006).

2.2.3.1 Quality of Education

Despite much progress over the last thirty years, and good basic outcomes, the Libyan education system does not yet fulfil the goals it has set itself, including providing the

training and skills that are required to drive the economy forward. Poor quality inputs and a number of severe structural challenges are negatively affecting the education system. Since education is a vital driver of quality movement and competitiveness, and thus of the prosperity, these issues must be addressed for the Libyan people and economy to achieve their maximum potential. The Global Competitiveness Report, GCR (2006) ranks Libya 110th out of the 111 countries studied on the overall quality of the education system. Libyan school facilities and teaching methods are not regularly benchmarked against any international standard or any systems with those other countries. Furthermore, the strong links between research institutions and business- which are typically seen in developed countries, do not exist in the Libyan economy (UNESCO, 2005).

Despite the lack of accurate information, it is clear that education in Libya has quality issues. This appears from two sources: problems with the quality of inputs, such as curricula, teachers and the educational infrastructure; and a number of structural issues. These include the lack of reliable and objective standards, no central body to provide overall planning and monitoring, inefficient allocation of public resources, and a lack of resource in specific areas (CERA, 2005)

2.2.4 Economy

Libyan economy is socialist-oriented and depends primarily upon revenues from oil. In 2005 the oil sector contributed about 56 percent of GDP, 97 % of the country's exports of goods, and 80 % of government revenue, GPC (2005).

These oil revenues and a small population give Libya one of the highest per capita GDPs in Africa, (11600 US \$) but little of this income flows down to the lower orders of society. Libya's non-oil and gas sectors contribute only 40% of Libya's GDP while employing 97% of the formal workforce. If oil wealth were discounted, Libya would have a very low GDP per capita, due to the current level of business competitiveness. Public services including education, healthcare and other services contribute only 9% to Libya's GDP, but employ 51% of the formal workforce (UNDP, 2005).

Climatic conditions and poor soils severely limit agricultural output, and Libya imports about 75% of its food. Higher oil prices over the last four years (2002 - 2006) led to an increase in export revenues and improved macroeconomic balances but have done little to stimulate broad-based economic growth. In recent years measures have been taken to return parts of the economy such as retail to private ownership, in the form of partnerships and joint ownership. Libya is making slow progress toward economic liberalization and the upgrading of economic infrastructure (World Bank Group, 2005).

The Libyan economy is heavily dependant on revenue from extracting and selling natural resources, rather than creating products and services through investment and innovation. In other words it is an economy based on inherited rather than created prosperity. Libyan leaders have repeatedly stated that the economy must expand beyond the energy sector to create the conditions in which Libyans themselves can create new sources of wealth. At the same time, the modern global economy has created new challenges for nations wishing to raise the standard of living for their people. It became very essential for nations to produce goods and service they are globally competitive. Economies such as Singapore, Israel, Malaysia and Ireland have emerged through their emphasis on building the competitiveness of their economies in the global market.

The Libyan experience of the past thirty five years indicates the magnitude of investments implemented in the various sector and making good progress in providing the infrastructure for the economy. However, during the last fifteen years a number of problems, such as unemployment, health care, housing, education developed and were usually related to the nature of economic performance under the control of the public sector (World Bank Group, 2005)

2.2.4.1 Role of Government in the Local Economic

Libya has been described as a 'distributive' state in which national and local institutions emerged not to extract wealth (through tax-gathering mechanisms) but to spend it, (World Bank Institute, 2005). Indeed, the primary activity of the Libyan authorities is to distribute budgets, based on requests from local people's congresses. A focus on

distribution rather than wealth creation typically leads to policies that produce inefficiencies and subsidies that create market distortions.

2.2.4.2 Private Business and Small Enterprises

The Libyan economy is dominated by state-owned enterprises (SOE's) that are often inefficiently run, inequitable and non-transparent in granting contracts. SOE managers are not encouraged to maximize efficiency- government salaries are low and are not linked to performance.

Private businesses are stifled by excessive bureaucracy and an uncertain policy environment and the private sector also finds it difficult to access appropriately-priced capital or basic banking services. This means that many genuine businesses remain unfunded and innovation is depressed. These small enterprises lack scale and efficiency, avoid paying exaggerated taxes, and have low standards of quality, all of which hinder productivity.

2.2.4.3 Agriculture Cluster-Economic Performance

Before the discovery of oil and gas reserves, agriculture contributed about 25% of Libyan GDP. Official numbers for 2003 indicate that it now represents 4-5% of GDP and 7-8% of total employment. However, some studies shows that many more Libyans are engaged in the sector on a part time basis (UPA, 2000-2005).

There is evidence (NCB, 2005) of low efficiency in the performance of publicly managed production projects, as well as the use of outdated technology in irrigation and farming and of older, less productive crop varieties. With the focus on self-sufficiency, potentially viable export commodities such as olives and dates are not exploited, and the only export growth area has been fisheries. Water supply is the only major infrastructure area where Libya fares well, mainly due to the huge investment made in the Great Man-made River (GMR) water supply project (35 billion US\$). However, the delivery of water to agricultural areas can still be improved. Libya needs to develop an integrated

and sustainable water strategy and balances the supply of water with the increasing urban and agriculture demand (UPA, 2000-2005)

2.2.4.4 Misuse of Economic Resources

The state's role in the Libyan economy has unfortunately been synonymous with bureaucratic regulation, unproductive subsidies, and state ownership of important economic assets. The results have been an adverse development of social and economic changes with most of the economic stress due to mismanagement of the economy by an un-knowledgeable and uncommitted leadership. On occasions laws have been changed overnight and regulations and laws often do not seem clear or credible to potential investors, or even to the people of the country. Alqadhafi (2002), in his study- Libya in the XXI century- argues that the misuse of economic resources mean poor returns from the natural, human and material resources as a result of lack of optimal use of such resources. He attributes the misuse of the economic resource to:

- Orientation of a part of human or material resources towards a specific economic activity, while there is another opportunity for use of such resources for achieving high return rates than those which can be achieved from such economic activity. This results in losing the opportunity for the society and depriving it of maximum benefit from its (rather limited) resources;
- Employment of human resources in a productive or service field without achieving the optimal utilization of all human resources available or utilizing them at lower rates than those envisaged thereby;
- As a result of deficiency or shortage of information on employment opportunities, certain human or material resources remain idle.
- Lower production capacities of economic units for reasons related to management, financing or marketing, such as failure of factories in achieving the production targets or lower actual (realized) production rates with respect to design production (or maximum) capacities.

The main weakness of the Libyan economy is the dependence on the oil sector. Another weakness is poor management efficiency in some enterprises and the lack of a high trained, specialized, labour force. The main problem for Libya is that it has the resources but top management does not have the know-how or skills to manage them and bureaucracy and the abundance of laws constrain entrepreneurship.

There is a huge reliance on oil and gas, which are notoriously volatile in their pricing and revenues. 75% of government revenues and 95 % of export revenues come from oil and gas (NOC, 2005). While 60% of the government expenses go to paying salaries for somewhat unproductive government labour the salaries have been frozen for many years at a time. In real terms they are extremely low for a state with such huge oil and gas reserves (GPC., 2005)

2.2.4.5 US/ UN Sanctions Against Libya

US sanctions against Libya since the late 1980's have inhibited the development of oil and gas reserves and limited production over the years. As a result many fields and prospects have languished, awaiting future technology, investment and new development even though select international oil companies have been operating in the country over the years. Development access to oilfield technology and services have been significantly restricted due to sanctions and embargoes, especially evident with the absence of U.S. companies in Libyan upstream markets. During the first sanction imposed by the U.S. on Libya (1980), American companies withdrew from that country's oil upstream industry. Under the second sanction in 1986, the five remaining American companies were forced by the USA Government to stop their activities and pull out of Libya. The UN then imposed sanctions on the country that resulted in the temporary freezing of assets abroad as well as certain oil assets. This sanction had unfortunate consequences on Libyans' life in general, on development and educational and business projects in particular, and lead to the isolation from the latest movement in technology and knowledge.

These sanctions were finally suspended in 1999 followed in September 2003 by the UN lifting its sanctions and the US in September 2004. The country has tried to attract more trade partners as a result and there has been a pick-up in the pace of economic reform

with the government recently awarding oil exploration and production licenses to foreign companies. Libya estimates that the sanctions have deprived its economy of \$33 billion, whereas The World Bank estimated the figure to be \$18 billion, mostly as a result of under-investment in oil (Economist, 1999).

2.2.4.6 Lessons and Challenges

The experience of economic transition in other countries provides limited insights for Libya. The nature and objectives of the former Soviet economies and their successors, for example, are very different from those of Libya. Libya can, however, learn from their mistakes. The post-Soviet experience showed that privatizing loss-making state enterprises frequently led to a short-term increase in unemployment, asset sell-offs and the diversion of money into the pocket of a few individuals. Libyan officials stress that this must be avoided with a goal to 'expand the people's ownership.' Libya is therefore developing policies to improve the management of the most productive public enterprises, and to privatize the remaining state-owned enterprises in a way that is equitable and addresses the needs of redundant workers.

Libya faces a long road ahead in liberalizing the socialist-oriented economy, but initial steps - including applying for WTO membership, and announcing plans for privatization - are laying the groundwork for a transition to a more market-based economy (LIC, 2004)

2.2.4.7 Potential for Economic Development

Libya has many outstanding assets that are not fully engaged in its economy: its location, its unique history and culture, and, most importantly, many of its people.

Libya has traditionally been a country of traders, merchants, and entrepreneurs with the cultural heritage of the Mediterranean traders and the caravan traders. More recently Libya has needed to restore trading links and political relations with its international partners if it was to prosper in today's global world. It has taken considerable courage for Libya to change direction and Libyan businessmen have carried out important

projects that have produced very good profits in a few years. Some examples of potential for economic development are introduced below:

- **Reserves, Geology**

Currently, Libya has total proven oil reserves of 36 billion barrels. The country has twelve oil fields with reserves of one billion barrels or more each and two others with reserves of 500 million barrels. However, Libya remains "highly unexplored" and has "excellent" potential for more oil discoveries. In addition, despite years of oil production, only around 25% of Libya's total area is covered by agreements with oil companies. The under-exploration of Libya is due largely to sanctions and also to stringent fiscal terms imposed by Libya on foreign oil companies (NOC, 2005).

- **Natural Gas**

The Continued expansion of natural gas production remains a high priority for Libya for two main reasons. First, Libya has aimed - with limited success - to use natural gas instead of oil domestically (i.e., for power generation), freeing up more oil for export. Second, Libya has vast natural gas reserves and is looking to increase its gas exports, particularly to Europe. Libya's proven natural gas reserves in 2003 are estimated at 46.4 trillion cubic feet (Tcf), but the country's actual gas reserves are largely unexploited (and unexplored), and thought by Libyan experts to be considerably larger, possibly 70-100 Tcf. (NOC, 2005)

Libya has the potential to raise oil production above 3 million barrel per day (mbd), from the current 1.8 mbd, and to meet all domestic needs for gas while doubling current gas exports

- **Tourism:**

Tourism could become an important export cluster, driving both economic and employment growth however, fundamental barriers such as visa processing, bureaucracy and the poor quality of infrastructure need to be addressed.

- **Location:**

Libya's strategic position in North Africa **figure 2.1** and its abundant oil and gas resources made it an important trading partner for European states. There may be opportunities in the transit-trade cluster, especially in trans-shipment and value-add services. Despite Libya's potential geographical advantages significant investments are required to develop this cluster in the highly competitive Mediterranean environment

In summary, given Libya's unique history and aspirations, key challenges ahead include: defining the role of government in facilitating wealth creation; strengthening incentives to encourage productivity; and managing the transition to a more competitive economy.

2.2.5 The Political System

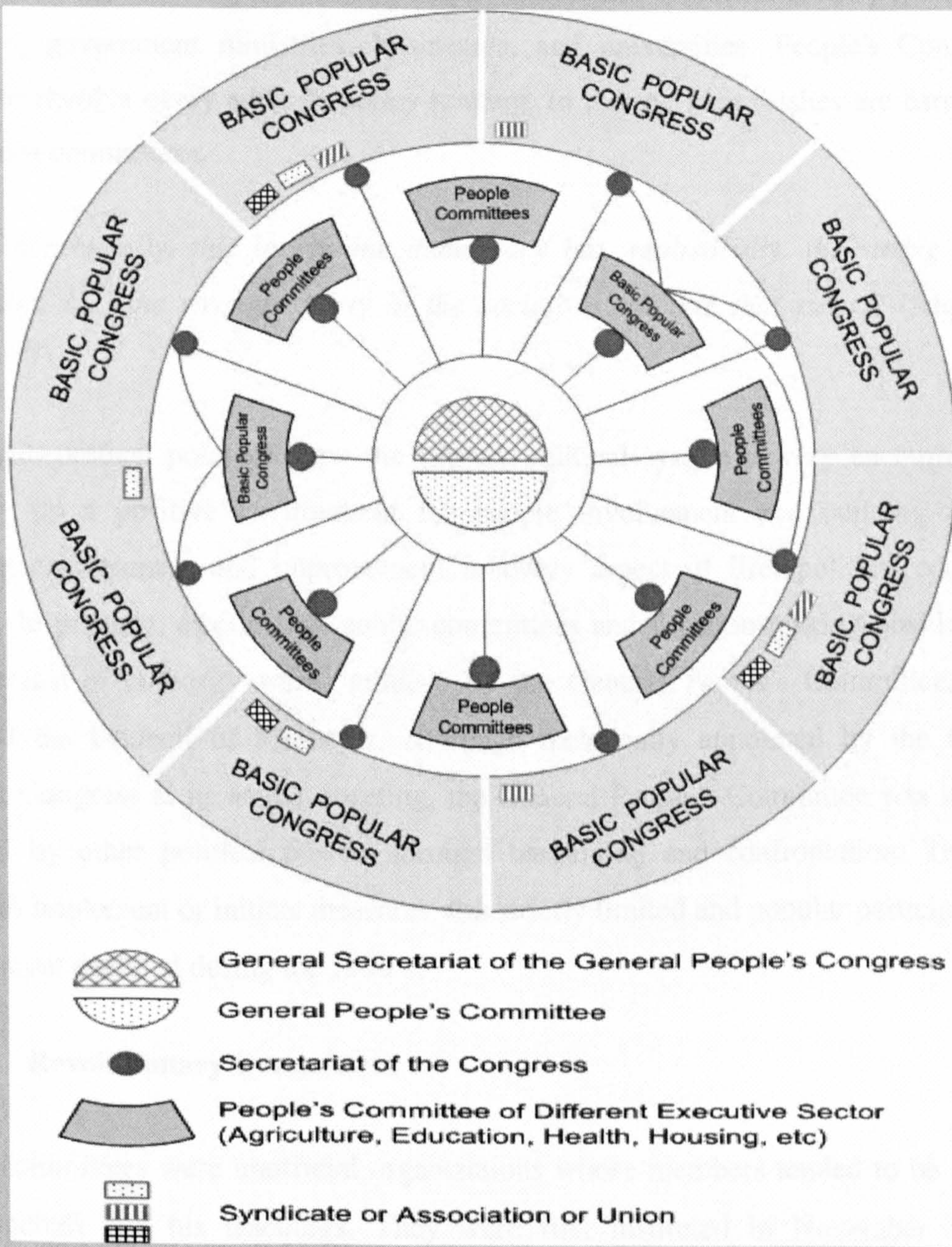
Serageldin (2005) examines the meaning of *governance* and its ten key components of transparency, accountability, pluralism, and participation, the rule of law, the free flow of information, democracy, respect for human rights, gender equality, and a learning environment that respects and nurtures the innovative spirit of young people. The World Bank(1994) has developed a useful definition of good governance as

“epitomized by predictable, open and enlightened policy-making; a bureaucracy imbued with a professional ethos; an executive arm of government accountable for its actions; a strong civil society participating in public affairs; and all behaving under the rule of law.”

From the developing world's experience especially Eastern Europe, Africa and South America the political system plays a major role in any country development or the opposite. (Sheridan, 1997). The misuse of public office for private gain is a global phenomenon capable of paralyzing a country's development and diverting its precious resources from the public needs of the entire nation (Vittal, 2001). A sense of vision backed by political commitment is essential to establish the autonomy of the state and to invest it with a capacity to direct the development agenda.

2.2.5.1 Libyan Political System Structure

In the Libyan political system political parties are banned. According to the political theory of Colonal Mu'ammarr al-Qadhafi, multi-layered popular assemblies (people's congresses) with executive institutions (people's committees) are guided by political cadres (revolutionary committees). Libya's political structure is unique, relying on the concept of Jamahiriya ("state of the masses"). Adopted in 1977, it is supposed to be based on the concept of Shura in Islam. It advocates direct representation by the people through a network of committees and popular congresses. All Libyan people participate in elections for their local Basic People's Congress, which represents the local government. These secretariats make up the General People's Congress (GPC), the highest legislative body in the country, which exercises control over all government activities and designates ministers (see figure 2.2).



Adopted from the Green book, 1977

Figure 2-2: Libyan political system structure

Alqadhafi coined the term Jamahiriya to mean "power to the masses," his interpretation of freedom. In theory, the power of the masses was to be exercised by the popular committees established at various levels and in different segments of the population-in localities, government ministries, businesses, and universities. People's Congresses sought to involve every adult in policy-making. In theory, their wishes are carried out by popular committees.

"Theoretically, this is genuine democracy but, realistically, the strong always rules, i.e., the stronger party in the society is the one that rules." (Alqadhafi, 1977).

From a theoretical point of view the Libyan political system is very encouraging in building up a positive environment for people involvement and building positive working environment and improvement in every aspect of life, politics, education, health. In practice, elections to public committees and decision-making positions and the exercise of authority were "guided" by the General People's Committee, which replaced the Council of Ministers. Although technically appointed by the General Popular Congress at its annual meeting, the General People's Committee was in effect selected by other political powers through bargaining and confrontation. Thus, the power to implement or initiate measures was strictly limited and popular participation in government declined during the 1990's.

2.2.5.2 Revolutionary Committees

These committees were unofficial organizations whose members tended to be devoted to Alqadhafi and his teachings. They were first instituted in November 1977 to supervise the Basic People's Congresses and to fight bureaucracy, and encourage democracy, and protect the rights of the ordinary civilians. Instead they have steadily grown more powerful and their mistake was forcing the revolution and imposing their personal desires on the public, eliminating people who do not agree with them.

The political climate of Libya in the mid-1980s placed numerous obstacles in the way of private sector development. The 1978 law requiring all enterprises to be run by workers' committees made effective management almost impossible. Furthermore, since workers' committees rarely accepted economic efficiency or profitability as valid objectives, many enterprises no longer had a clearly defined role in the economy. The result of such policies has been to stifle most dynamism in the private sector.

A lack of political management often results from the fact that leading political actors lose their ability to learn and develop their managerial capability. Instead of solving their accumulated management problems they cover them up, a situation which leads to number of problems:

- Although the government may be developing a vision, there is unlikely to be a robust, resourced plan to implement this. Good practice will depend on personal initiatives and there is unlikely to be committed political or managerial leadership;
- Inadequate attention is being paid to ensuring that the right people with the right skills are in place to deliver high quality services;
- Inefficiency: Public institutions often fail to provide the service for which they were established. Education, health, civic services and public utility organizations do not appear to deliver the goods for which they are paid by the government. In course of time they have come to perceive themselves as rules and regulators rather than service providers who should be accountable to their clients;
- Ineffectiveness: State institutions are ineffective when it comes to meeting new challenges thrust upon the society by changing local and international environment new technology, new social climate and new expectations;

- **Lack of clarity about responsibilities:** It is often difficult to establish who is responsible for which decisions. Whose fault is it? When responsibility is spread it is difficult to see how members and officers can be properly held to account;
- **Lack of Performance management:** Where All the government institutions are poorly managed and there are no national Performance Indicators (PIs) in the government institutions (Sayeh et al., 2005; Shembesh and Tulti, 2005)

In the past few years, the regime has made an effort to improve its image. Measures have included freeing political prisoners, welcoming back exiles and encouraging the private sector to establish it self again. There are signs that Libya is now moving towards a variety of economic reforms and a reduction in the state's direct role in the economy. Libya's prosperity has grown strongly over the last few years, due to oil price increases and the lifting the UN and USA sanctions.

A long-term policy development framework is needed for Libya to respond to global changes that will significantly impact the development of Libyan's manufacturing sector. Libya must be ready to adapt to these changes – to take advantage of the opportunities and avoid the dangers that they present by taking some serious steps such as (CERA, 2005)

- **Government must provide appropriate framework conditions:** security, good macro-economic management, sound and enforceable legal and property rights, transparent and predictable policies, well-functioning institutions and a business environment with low transaction costs;
- **Suppliers of physical and service inputs and infrastructure must meet international standards of cost, quality and delivery;**
- **Markets for labour, capital and information, along with their supporting institutions, must work reasonably efficiently.** There must be a competitive environment that stimulates firms to invest in capabilities;
- **Companies must be willing to invest in building new capabilities, mounting competitive strategies and developing the networks and clusters they need for efficiency and dynamism.**

2.2.5.3 The Need for Transformational Leaders

Because of severe competition and the significant changes happening in Libya transformational leadership with vision and the ability to communicate that vision is important. This includes the ability to build trust and generate excitement among employees in support of this vision. Parker(1997) listed the following steps to move towards such a winning edge'

- Provide leadership with a clearly articulated vision;
- Respect the history of the organization;
- Maintain consistency in discipline, standards and values upon which the organization has been based and grown;
- Develop the ability to predict, lead and manage change;
- Encourage continuous learning at both the organizational and individual level;
- Know and respect the opposition;
- Benchmark against the world's best;
- Encourage contestability – and the accommodation of alternative views;
- Encourage creativity and innovation;
- Retain respect for the individual and the ability to manage diversity;
- Encourage the boundary-less organization with flat structures and cross fertilization;
- Ensure reward mechanisms are totally integrated with the strategic direction of the organization;
- Think customers and suppliers;
- Be prepared to introduce new people into the organization;

.

The above steps are very similar to many transformational leaders' comments by Kotter, (1995), and Wheatley, (1992).

Sheridan, (1997) claims that the success of the East Asian economies is often due to political leadership rather than economic policies. It is their ability to facilitate the reforms required to stabilise government, to provide living essentials for people, develop infrastructure and harness technology to create an environment that is suitable

for bringing about economic improvements that are attractive to investors and promote trade.

As was mentioned in sections, 2.1 and 1.3, the requirements of transformation described above is not the reality in most developing economies such as Libya. TQM implementation requires a major overhaul of the organization's culture and structure. In general Libyan top management and middle management of manufacturing companies (public organizations) favour stability and are adverse towards any changes. (it has been like that for twenty five years), Therefore they are unlikely to initiate major changes within their organizations, with out Government support.

For the country to be transformed from traditional old approaches management and to be a competitive Libyan government should create and sustain the best possible climate for launching quality campaign nation-wide to improve the quality of products and services and raise the quality awareness in public and different institutions and organisations. Close cooperation between government and civilian resources is an absolute necessity.

2.2.6 Libyan Culture

The concept of culture is particularly important when attempting to manage organization-wide change. Practitioners are coming to realize that, despite the best-laid plans, organizational change must include not only changing structures and processes, but also changing the corporate culture as well.

Culture was described by Morgan(1997), as shared meaning, shared understanding and shared sense making. He argues that culture must be understood as "an active, living phenomenon through which people create and recreate their worlds". Interpreting and understanding national and organizational culture is an important activity for managers and consultants because it affects strategic development, productivity and learning at all levels. Cultural assumptions can both enable and constrain what organizations are able to do.

Not only in Libya but most governments Arab countries have miserably failed to develop proper institutions to serve the individual, social, political, and economic needs of their citizens. Like any developing country Libyan organization always run by incompetent managers, their main concern is to guard their own existence at any cost which makes the administrative culture is not conducive to serve the public's needs but to serve the political and administrative leaders in the top of the organization to seek their support or protection when needed. The hallmark of this self-serving administrative culture is its elitist mentality that has separated itself from the culture of the masses and therefore is mostly perceived by the citizens as a corrupt entity that does not meet the expectations of its citizens.

Citizens of Libya are predominantly Muslim. About 97 % percent of the population is suni Muslim. The influence of religion on most aspects of Libyan's life is obvious, as they practice their faith through their everyday actions.

No nation can achieve greatness unless it believes in something; and unless that something has the moral dimensions to sustain a great civilization. The release of human potential, the enhancement of individual dignity, the liberation of the human spirit Gardner (1961).

As mentioned in section 3.6.3 Total quality management consists of Values, tools and techniques, as it was defined by Hellsten & Kldfsjo (2000). The values representing the culture of individuals and society which is not easy to change, while tools and techniques can easily implement with strong commitment and resources availability.

All the values recommended for TQM culture, such as, honesty, trust, justice, integrity, equality, synergy and teamwork are strongly emphasized in daily Muslim practices, which make it easy for top management in any organization in Islamic countries to encourage employees practice such values in their daily activities in order to improve the working environment as an important factor of TQM implementation..

There is no distinction in Islam between private and public conduct. The same moral code which one observes at home applies to one's conduct in public. Every institution of society and every department of government must conform to the basic logical laws of Islam. Politics must be based on truth and justice. Nations should deal with one another on the basis of mutual recognition of rights, and due discharge of obligations. When man decides to submit to the will of God, and accepts His law as the supreme law, and organizes his life and laws in accordance with the revealed moral code, on the principle of accountability of God, the quality and character of his life cannot be limited to the boundaries of prayer practices. It must extend itself to every sphere of his work as a man of God. Allah said:

And when your lord said to the Engels "indeed, I will make upon the earth (Khalifah) a successive authority" [The Qur'an, 2:30]

Khalifah: successor, or Generations of man, one following a other.

Islam is a religion that provides guidance for worship as well as a social system for Muslims' public and private lives. Unfortunately most of the Muslims practicing the worship part only as tradition and heritage and ignoring the social and economical system which can solve their problems and give a good example to others in practicing a daily life activity. Islam believes that most social problems and ills emanate from disregard for the rights of others and concentration on individual's whims and desires, to which there is no end. Islam warns against the disruptive power of those desires and believes in controlling them before they get out of hand and interfere with a person's life and ultimately the society.

Islam is Almighty Allah's message to all humankind that aims at establishing right and justice among all people. Islam not only provides a common spiritual belief but also a texture, framework, and a general way of life with cultural symbols, values, and beliefs relevant to politics and administration. Islam provides a very delicate balance between the rights and duties of both individuals and groups. According to the Islamic set of guidelines, the individual has certain rights and freedoms that are God-given and cannot be denied or violated. Such rights include the right to live, the right to have the basic amenities of life, and the right to be safe and secure.

The most holy value in Islam is equality of Man in the eyes of God, regardless of a person's gender, race, social origin, wealth, class or any other social divisions. Individuals determine their own worth and status before God through proper conduct. God rewards believers and those who are dutiful: Allah said in Qur'an:

O' mankind! Lo! We have created you male and female, and have made you nations and tribes that you may know one another. The most honored in the sight of Allah is the best in conduct. Allah is Knower, Aware (The Qur'an, 49:13).

2.2.6.1 Managerial Themes in Islamic Culture

In an Islamic administration, the higher a person's position in the hierarchy, the greater is the challenge for competency, purity, and adherence to Godly standards. The main managerial task is to practice Islamic dominant values and provide an environment which is conducive to growth and fulfilment of individuals' full potential. The Manager is not only a leader, but a teacher, a companion, a friend, a helper, and more importantly, a compassionate model for the employees and the community (Moshabbeki, 1994)

- **Leadership in Islamic Management**

According to Islamic culture leadership position is vital to the welfare of the group and hence should be occupied only by competent people. The leader is totally responsible for the welfare of his people before God. The followers should obey the orders of their leaders. The Koran attests, "O ye who believe! Obey Allah, and obey the Messenger, and those charged with authority among you. (The Qur'an, 5: 59) An Islamic leader is to treat his employees with respect and kindness. God provides the following guidelines to the Prophet in dealing with his followers as it was mentioned in *The Qur'an*,:

It was by the mercy of Allah that you were lenient with them. And if you had been rude [in speech] and harsh in heart, they would have disbanded from about you. So pardon them and ask forgiveness for them and consult them in the matter. And when you have decided, then rely upon Allah. Indeed, Allah loves those who rely [upon him]. (Qur'an 3: 159)

- Leader should be Strong and Trustworthy.

The Qur'an says,

The best recruit is the one who is strong and trustworthy” (The Strength could be, however, in the faith and in knowledge). (Qur'an 26:26).

- Commitment

Commitment to work, Islam urges its believers to be faithful and more committed to their work. The prophet Mohammed in his hadith said, “*Allah likes that when a man does a certain task he does it perfect.*” This is exactly equals to (do it right first time and every time)

- Responsibility

Each one of you is a Guardian and responsible for those of whom he is in charge. The Ruler is a Guardian and thus responsible for his subjects. A man is the Guardian of his family and is responsible for those under his care. In like manner, each one of you is a guardian and is responsible for what he is entrusted with. [Prophet Mohamed]

- Judgment: The Qur'an says

Whenever you judge between people, you should do so with fairness.
[The Qur'an, 4:58]

Many other characteristics of the leadership were mentioned in Qur'an such as: **Ability** [The Qur'an, 3:104]; **Fairness** [The Qur'an, 57:25]; **Honesty** [The Qur'an, 9:119]; **Sacrifice** [The Qur'an, 3:92]; **Modesty**, [The Qur'an, 4:36], **Understanding** [The Qur'an, 6:155] , **Motivations** [The Qur'an: 11:85]

Ethical principles, values and standards mentioned above should be embodied in exemplary models to be followed by the vast majority of the people in the society. Allah says

O you who have believed, why do you say what you do not do? Great is hatred in the sight of Allah that you say what you do not do. [The Qur'an, 61:2]

- **Teamwork**

Islam lays down that teamwork, partnership, consultation and joint planning is to be the rule. Islam order Moslems to hold fast onto the robe of God. Believers are instructed to adopt and put into practice the philosophy of teamwork and cooperation. Islamic teachings and tradition alike urge believers to work and act in unity and avoid discordance and disunity. The Qur'an attests:

And hold fast all together by the rope which Allah (stretches out for you) and be not divided among yourselves; and remember with gratitude Allah's favor on you; for ye were enemies and He joined your hearts in love so that by His grace ye became brethren; and ye were on the brink of the pit of fire and He saved you from it. Thus doth Allah make his signs clear to you: that ye may be guided? [The Qur'an, 3:103]

Another important component of leadership in the Islamic tradition is the concept of 'shoura' or consultation in which every member of the group or community participates in the dialogue in order to establish the common good. Teamwork is valued as an engine of survival and prosperity. Many verses in the holy *Quran* admonish the faithful to work together and in harmony while assuming their individual responsibility with due consideration given to accountability as well. Under individual accountability falls the concept of 'itqan' which translates into the English terms of high quality or perfection. Islamic culture teaches that 'itqan' is to be pursued in every action taken without any exception. In some modern-day business operations, this term is used synonymously with total quality management (TQM).

- **Knowledge Management**

A Muslim must seek knowledge continuously and must always strive to excel in his or her understanding as the Holy Qur'an says:

And do not pursue that of which you have no knowledge. Indeed the hearing, the sight and the heart about all those [one] will be questioned

[The Qur'an: 17: 36]

"So ask the people of knowledge if you know not"

[The Qur'an: 16: 43]

"Say, are they alike those who have knowledge and those who don't have knowledge?"

[The Qur'an: 39: 9]

"Allah will exalt in degree those of you who believe and those who have been granted knowledge"

[The Qur'an: 58: 11]

"Whoever treads a path seeking knowledge, Allah will make easy for him the path to Paradise."

[Prophet Mohamed]

Islam has placed knowledge and thinking as a precondition for action, and this ensures that the action undertaken is the correct action and that the action is according to Islam and is the correct action to achieve the aim as the Holy Qur'an says:

Do not be quick to recite the Qur'an before its revelation has been accomplished, but rather say: "Lord, increase my knowledge."

[The Qur'an, 20:114]

This, briefly, is what Islamic management stands for. This is no dream or Utopia. The Prophet of Islam, and his companions, developed and established a complete model of quality management on this earth for mankind to follow.

2.3 Summary

Government can play an important role in creating the environment for improving quality, increasing productivity and enhancing nation competitiveness. This chapter has outlined some of the main factors (political, economic, cultural and demographic) which can be expected to influence the quality improvement in all sectors of Libyan industry and other public sectors. From the analysis of others experience in the west, Japan and East Asia, it has been shown that there is a positive relationship between Government awareness, support and quality improvement nation-wide. To succeed in the world market, Libyan products and services must be competitive both in quality and price. Implementation of TQM in Libyan companies would enhance product quality and productivity, thus increasing their competitiveness in international markets. To be able to build a competitive industry the government needs to play a major role in preparing the ground for Nation wide quality project. Government needs to secure business stability and clear property regime, a legal system, which is efficient fair and strong and an infrastructure on which commerce can function. These are the fundamental tasks of government and the most important thing a government can do is to raise the national awareness for quality and standards.

The next Chapter will explore the TQM literature to determine the most suitable framework for Libyan companies to adopt in implementing TQM.

The purpose of this chapter is to explore the quality and Total Quality Management (TQM) literature in order to arrive at an understanding of the critical success factors which form the foundation for the implementation of TQM. The progress and failure of TQM in developed and developing countries, especially in Arab countries, is also reviewed and compared in the light of these findings.

Chapter 3

3 Total Quality Management: A review of the literature

3.1 Introduction

Over the last three decades quality assurance (QA) and Total Quality Management (TQM) have become a central preoccupation of organisations over the developed and some of the developing nations in the world. Today the concept of quality is not limited to products, but also incorporates the productive, organizational and design functions that may be associated with a particular product or service, as well as the people that are involved in these processes. Total Quality Management (TQM) is a management philosophy that involves all aspects of quality that are of interest to both the consumer and the organization. Globally, the TQM approach has shown itself to be a viable way of cutting costs, increasing productivity and improving quality. In this Chapter sections 3.2 and 3.3 give a brief history of the different views and concepts of quality. Section 3.4 presents the quality principles, as they have been agreed by the International Organization for Standardization (ISO). These principles can be used as the base for a

framework for quality management system implementation. Section 3.5, provides the story of quality evolution, from inspection, quality control, quality assurance to TQM. Sections 3.6 and 3.7 explain the TQM approaches from the different views of quality leaders and quality awards, and its relation to ISO 9000. Section 3.8 shows the experience of developing countries in implementing TQM and outlines the lessons learnt from those experiences. Finally section 3.9 evaluates the TQM phenomena; was it just another fad or can it still progress and give results? Section 3.10 provides a brief summary of this chapter.

3.2 A History of Quality

Quality: When did it start?

The concept of quality has been with us since the beginning of time. As early as the creation of the first human (Adam), described in the Qur'an "*Allah (God) has created man in the most excellent of moulds*" (The Qur'an: Surat 95: Ayah 10). In the Book of Genesis, God conducts His own quality assessment. "*And God saw every thing that he had made, and, behold, it was good.*" [Genesis i, 31].

Juran (1995) stated that "*there is misleading assumption that certain twentieth century individuals – Shewhart, Deming, Juran, Ishikawa, or others – invented Quality.*" According to Juran, "*managing for quality has been a continuing process over the millennia*". William Cooper Procter told his employees in 1887: "*The first job we have is to turn out quality merchandize that consumers will buy and keep on buying. If we produce it efficiently and economically, we will earn a profit, in which you will share*" (Bank, 1992).

Gitlow *et al.* (1987) traced the history of quality as far back as early 2000 BC, Hammurabi's Code (2150 BC), when Phoenicians and Egyptians, were all implementing quality procedures and measures. According to Mass'and Hoogendijk (1997), the pyramid of Cheops is the first example of tailored work in product inspection. Because of its perfect form, the pyramidal construction is often taken as a

symbol for models of quality control. Egyptian wall paintings circa 1450 BC show evidence of measurement and inspection. Stones for the pyramids were cut so precisely that even today it is impossible to put knife blade between the blocks. The Egyptians' success was due to the consistent use of well-developed methods and procedures, and precise measuring devices.

Middle Ages Quality

Beginning in the Middle Ages, and before the Industrial Revolution, building quality into products was generally guaranteed by the guilds. They required long periods of training, which instilled in craftsmen a strong pride in the quality of their work. The quality assurance was informal and the manufacturer dealt directly with the customer where every effort was made to ensure that quality was built into the final product by the people who produced it. Customers expected quality, and craftspeople understood it (Howard, 1992; Juran, 1995).

The Industrial Revolution

The Industrial Revolution changed everything. The term “scientific management” was introduced by Frederick W. Taylor (1856-1915) who divided the organisation into managers and engineers – given the task of planning; and supervisors and workers – the task of execution. Quality was becoming an important issue and meeting production deadlines became the production manager's main priority, the responsibility for quality was placed increasingly in the hands of a quality control department. Inspection was the primary means of quality control during the first half of the 20th century.

In 1924, at Bell Telephone Laboratories, Walter A. Shewhart (1891-1967) introduced a new data collection, display and analysis form. It contained the first known example of a process control chart and signalled the beginning of the age of statistical quality control. These charts pinpointed the sources of variation within processes and were used to control the quality of, and to improve, the processes that delivered the output.

After World War II

In 1950, W. Edwards Deming (1900-1993), a statistician who had worked with Shewhart at Bell Labs, was invited by the Union of Japanese Scientists and Engineers (JUSE) to speak to Japan's leading industrialists about statistical quality control. Deming presented a series of lectures on statistical quality techniques and on the responsibilities of top management for delivering quality products and services. The Japanese industrialists and engineers embraced Deming's teaching, and Japanese quality, productivity, and competitive position significantly increased and started to capture the USA and European markets. Under Deming, Juran and Feigenbaum, the concept of quality control, no longer viewed as principally a corrective activity, was extended to be a continuous improvement in all areas, of the organization

3.3 Definitions of Quality

According to Djerdjour and Patel (2000), quality is no longer optional, it is an essential strategy to survive and before one can discuss the concept of Total Quality Management (TQM), one first needs to understand and define the concept of quality. Definitions of quality include: perfection, consistency, eliminating waste, speed of delivery, compliance with policies and procedures, providing a good, usable product, doing it right the first time, delighting or pleasing customers, and total customer service and satisfaction.

The Merriam-Webster Dictionary defines quality as "That which makes something what it is; characteristic element; basic nature, kind; the degree of excellence of a thing; excellence, superiority." But what is 'excellence'? How do we measure it?

Dictionary definitions of quality do not produce a consistent and objective view of quality that can help a quality professional understand the concept. Quality is a much more complicated term than it appears and some academics' and practitioners' definitions might help to make it clearer and reduce confusion or misunderstanding to a minimum. Among the well known definitions given to quality are: Quality is fitness for

use, Juran (1989); therefore, quality products should meet or exceed customer requirements, Crosby (1984), Quality is conformance to requirements. Thus requirements must be clearly stated so that they cannot be misunderstood. Deming (1986) did not define quality but emphasized that Quality can only be judged by the customer; quality may mean different things to different people.

Straker, (2001), said *“Philip Crosby’s definition is easily toppled: if requirements are wrong, then failure is guaranteed.”* Also he added: *“Though Juran takes a step further down the value chain, to the use of the product or service, he still presupposes that we can fully understand how the product will be used, which is a great challenge (and not always possible).”* According to Straker: *“Quality at its simplest level, answers two questions: ‘What is wanted?’ and ‘How do we do it?’ ”*

The American Society for Quality Control (ASQC) adopted Feigenbaum’s interpretation (1983) as its official definition of quality and, summarized it as *“Quality is what the customer says it is.”*

After detailed analysis of the concept of quality , Oakland (2003) concluded and defined it as; *“the degree of fitness for purpose and function.”*

Garvin (1988) is one of the few authorities who have analysed the range of quality definitions, classifying them into five groups as listed in Table 3-1.

Table 3-1: General Approaches to Quality (Garvin, 1988)

1. Customer-Based	Fitness for use, meeting customer expectations.
2. Manufacturing-Based	Conforming to design, specifications, or requirements. Having no defects.
3. Product-Based	The product has something that other similar products do not have that adds value.
4. Value-Based	The product is the best combination of price and features.
5. Transcendent	It is not clear what it is, but it is something good... Only experience can teach to recognize quality.

It is important to note that satisfying the customers' needs and expectations is the main factor in all these definitions. Therefore it is imperative for a company to identify such needs early in the product/service development cycle.

In latter quality definitions, (Bergman B., 2003; Dahlgaard et al., 2002; Dale, 2003; Kirker, 1994; Shiba et al., 1993) emphases were put on customer delight and creating customer loyalty and the frequently used definition of quality as 'delighting the customer by fully meeting their needs and expectations.'

As the above definitions may include quality attributes such as; performance, appearance, availability, delivery, reliability, maintainability, cost effectiveness and price, the organization should identify what these needs and expectations are. It must understand them, and implement plans and measurements to meet them. For an organization to fulfil these requirements and satisfy the customer, quality must be everybody's responsibility, i.e. for all people, in all departments and for all activities, and be a daily practice towards improvement, so that it becomes a total quality organization.

It seems that every quality expert defines quality in a somewhat different way. Is any one definition "more correct" than the others? Is one quality expert "right" and the others "wrong"? Reeves and Bednar (1994), in tracing the evolution of quality definition concluded that different definitions of quality are appropriate under different circumstances. They concluded that for customers, meeting and/or exceeding expectations is the most relevant definition of quality.

Harvey and Newton (2004), pointed out that it is difficult to define quality, because the concept is both a personal and social construct. They argued that quality is a perception. It is not an absolute but is relative to each person's views and experience and is not an isolated activity, but part of the whole project environment. The criteria for selecting attributes are based on personal values and judgments. (Barnett, 1992; Watty, 2003). This may explain why some say quality is in the eye of the customer. In today's businesses, ignoring quality could increase cost and time, lose customers and lead to project failure.

3.4 The principles of Quality Management

With globalization and global competition, quality management is becoming increasingly important to the leadership and management of all enterprises and organizations. Eight quality management principles have been identified in the new standard ISO 9004\2000 as a framework towards improved performance of an organization. Table 3-2 shows the quality principles as approved by the ISO organization and internationally agreed upon. They are aimed at helping organizations to achieve sustained success on the total quality management journey.

Table 3-2: Quality Management Principles

Principle 1 Customer focus	Organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations.
Principle 2 Leadership	Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.
Principle 3 Involvement of people	People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.
Principle 4 Process approach	A desired result is achieved more efficiently when activities and related resources are managed as a process.
Principle 5 Systems approach to management	Identifying, understanding and managing interrelated processes as a system contributes to the organization's effectiveness and efficiency in achieving its objectives.
Principle 6 Continued improvement	Continual improvement of the organization's overall performance should be a permanent objective.
Principle 7 Factual approach to decision making	Effective decisions are based on the analysis of data and information.
Principle 8 Mutually beneficial supplier relationship	An organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value.

Source: (ISO) International Organization for Standardization

There are many different ways of applying these quality management principles. The nature of the organization and the specific challenges it faces will determine how to implement them. Many organizations will find it beneficial to set up quality management systems based on these principles.

3.5 Quality Evolution

During recent decades, the concept of quality has evolved from a very narrow definition to a more comprehensive one. The road towards quality started initially with quality inspections, followed in the 1930s by quality control where the focus shifted from product quality towards process quality. In the 1950s the concept of quality assurance was introduced where the quality of the organisation came into view. In the period thereafter the concept of TQM was developed, where continuous improvement, empowering people, caring for people and involvement were guiding values, instead of compliance to specifications and allocating blame to someone if there was any variation from normal routine. By implementing Deming's principles (1986; 1982), and others of total quality management (TQM), Japan experienced dramatic economic growth and started to capture the USA and European Markets.

Garvin (1988) has identified four "eras" of quality development

- **An inspection era:** In the early stages of the discipline, quality was associated with mistakes and errors detected in products or services after they were produced. This inspection process generally did not have any influence on production activities or in the determination of the quality requirements.
- **A statistical control era:** in which defects were reduced by controlling the processes that produced the products. The ultimate target had remained the same to meet the requirements. Quality control activities also included a cause-and-effect analysis to understand the immediate cause for variability and root causes of failure.
- **A quality assurance era:** in which techniques and philosophies encompassed total quality control and top management took responsibility for ensuring quality throughout the organization. Additional advances in planning for quality and improving the design of the products were required.

- **A strategic management era:** in which quality was defined from the customer’s point of view and the organization’s strategy became centred on quality.

The quality evolution was the result of huge efforts from the quality expertise and pioneering companies and institutions in Japan, and later in other countries, to achieve a total quality management culture. Table 3-3 shows the quality movement in the second half of the 20th century.

Table 3-3: Evolution of Quality Management Concepts

Time period	1945-1949	1949-1951	1951-late 60s	late1960s-1980s	1980s-present
Definition of Quality	Conformance to technically specified norms and standards	Conformance to technically specified norms and standards	Fitness for use	Conformance to customer requirements	Achieving maximum of customer satisfaction
Quality Management System	Quality Inspection	Statistical quality control	System-oriented quality assurance	Company-wide quality-control	Total quality management
Parameter of The quality	Final product	Final product	Production process	Customer needs	Customer expectations

Adapted from Loffler, 1996

3.5.1 Quality Movement in Japan

“Had Deming and I stayed at home, the Japanese would have achieved world quality leadership all the same...”

Joseph Juran (1989)

The Japanese quality management culture had the most marked influence on TQM. Although Japanese companies initially contracted the help of quality “gurus”, such as Deming and Juran, leading Japanese experts built a solid reputation and a unique quality management philosophy. Accordingly, Dr. Kaoru Ishikawa developed the Cause-and-

Effect Diagram as a problem-solving tool which later became popular as the Ishikawa Diagram.

Deming was invited in 1950 to serve as consultant to Japanese industry and introduced new quality control concepts to the Japanese. The central idea was to improve the production system to prevent defects instead of inspection. Then Juran arrived in Japan in 1954 and conducted seminars for top and middle-level executives; his lectures focused on planning, organizational issues, management’s responsibility for quality, and the need to set goals and targets for improvement. The result was that large companies started internal training, to improve their quality management. One of Juran’s beliefs was that *“quality does not happen by accident, it must be planned”*.

The Japanese listened very carefully to Deming, Juran and Feigenbaum, adopting their ideas and over time developing them further. They extended the application of process improvement from manufacturing to administrative function and service industries so that the quality concepts affected the whole organization. They started with “first of all copy the west”, which very rapidly changed to “catch up with the west”. The establishment of the TQM methodology has been the real secret of Japanese success and it took them 45 years to develop, through three phases as shown in Figure 3-1.

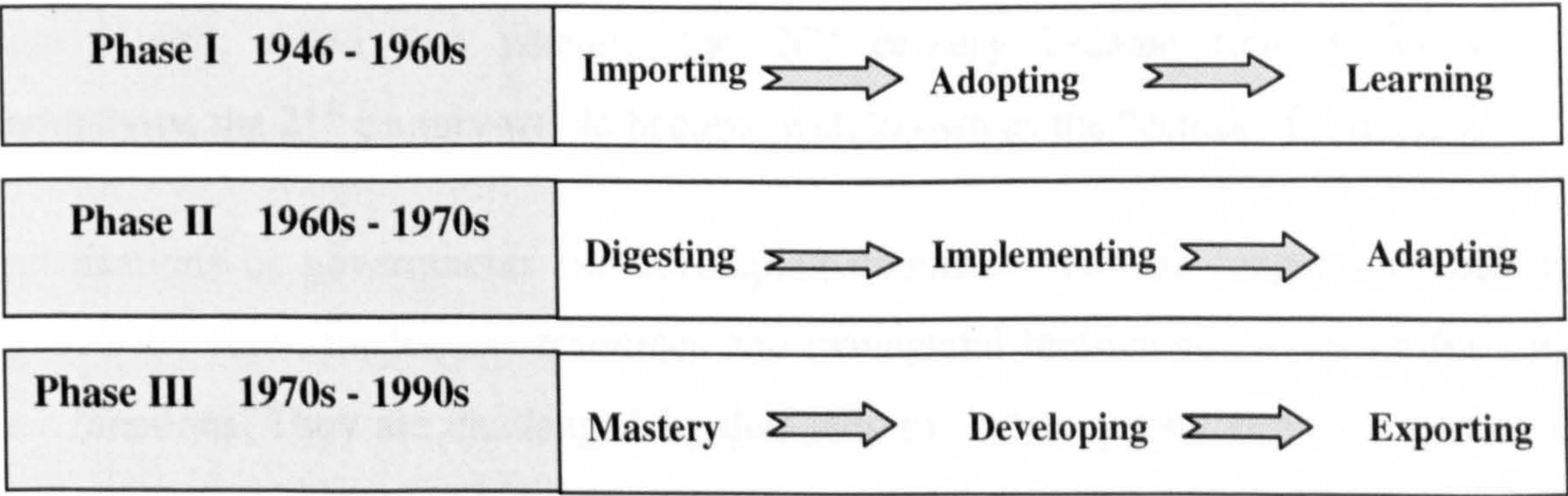


Figure 3-1: Quality Development Phases in Japan

The Japanese efforts were acknowledged by the developed countries as Juran stated:

“The Japanese were becoming the best-trained workforce with respect to managing for quality, and they deserve what they gained” (Juran, 1989)

Juran, (1967), made the prediction that *“The Japanese are heading for world quality leadership, and will attain it in the next two decades, because no one else is moving there at the same pace.”*

In the 1980s, when the United States began to see a reduction in its own world market share in relation to Japan, American business rediscovered Deming, whose work with other quality management experts such as Joseph Juran and Philip Crosby contributed to the development of TQM theories, models and tools.

3.6 Total Quality Management

At the beginning of the 21st century, the creation of the global market, international orientation of management that sweeps away national boundaries, the introduction of new technologies, and shifts towards customer focused strategies, made the competition stronger than ever. The criteria for success in this global, internationally oriented market have been changing rapidly. In order to expand business, enter new markets, and set realistic, competitive long-term objectives, excellence became an imperative. Management's effort has been directed towards discovering what makes a company excellent (Hamel and Prahalad, 1996; Kanji and Sá, 2001; Oakland, 2003).

Juran (1995), noted that whereas the 20th century became famous for world productivity, the 21st century would become well known as the “century for quality.”

Organizations or governments (in developing countries), can no longer hide behind bureaucratic rules, inadequate resources and managerial inefficiency while performing their functions. They are challenged by demands for better quality services, improved performance standards, and more responsiveness. Most developing countries are not prepared for the challenges of the new globalizing world and steps should be taken by many of these countries to improve their quality standards and aim for better governance and administration. While there is a long way to go, the researcher thinks that TQM offers an effective strategic instrument towards the optimal goal of

improved/quality service delivery and organizational performance (Marash, 1993; Mossa, 2001).

To improve quality and achieve excellence, organizations must develop a corporate culture of treating people as their most important asset and provide a consistent level of high quality products and services in every market in which they operate (Zammoto and Krakower, 1999). Such an environment has supported the wide acceptance of Total Quality Management (TQM) which emerged recently as a challenging marketable philosophy. This philosophy involves three areas of change in an organization: people, technology and structure (Dawson, 1997).

Total Quality Management (TQM) is an approach to improving the competitiveness, effectiveness, efficiency and flexibility of the organization in satisfying customer demands (Voehl, 1990). It is processes that recognizes the need to determine the customers' requirements and uses that knowledge to drive the entire organization to ensure those needs are fully met.

Total Quality Control (TQC) had been developed further in Japan and it was re-imported to the United States in the 1980s, contributing to the revitalization of its industries. While the term TQC had been used in Japan, it was translated as TQM in western nations (Feigenbaum, 1983; Oakland, 1993). To follow an internationally-accepted practice, Japan changed the name from TQC to TQM (Dale, 1994a).

A traditional management organization, especially in economically developing countries, still considers quality as the responsibility of the Quality Control Department, and believes it is only related to the production department because of a lack of knowledge and lack of awareness. Poor quality can exist in every department, such as administration, finance and purchasing. Total quality is total in three senses: it covers every process, every job, and every person, Lewis and Smith (1994). It does not cover only manufacturing, marketing and customer services but every function that could be affected and improved. Total quality is not only management's job or that of a small group to implement quality initiatives; it is a total task in that each person is responsible

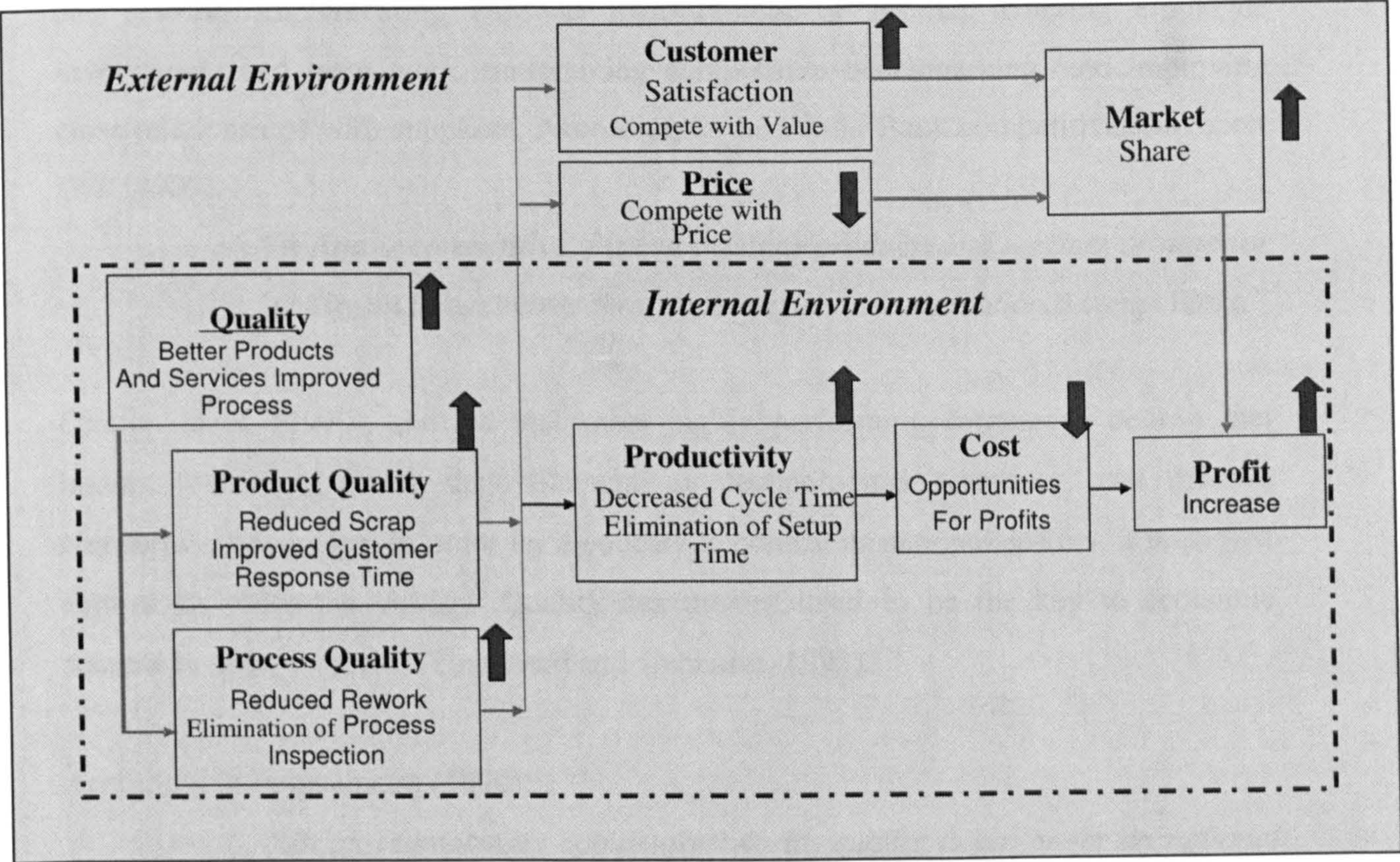
for the quality and should participate in building the whole picture (Lewis and Smith, 1994; Voehl, 1990).

3.6.1 Why TQM is Important

Deming (1986), Juran (1995) and Ishikawa (1985), share the view that “An organization’s primary purpose is to stay in business so that it can promote the stability of the community, generate products and services that are useful to customers, and provide a setting for the satisfaction and growth of organization members” (Hackman and Wageman, 1995). Crosby (1995), states that:

“Nothing is more important to the prosperity of a developing nation than quality. The only way a developing nation can increase their trade activities and develop in a sustainable way is to improve the quality of their products and services”.

Sterman et al. (1997), argue that in the long run, TQM lowers costs, raises quality, and increases productivity and profitability. This is consistent with the description of Deming (1982) and the results of quality achievement. Deming’s quality chain reaction diagram is shown in Figure 3-2.



Source: Quality 101, ASQ learning

Figure 3-2: Schematic Diagram of Quality Chain Reaction

3.6.2 TQM as a Competitive Advantage

The Total Quality Management (TQM) philosophy and related quality management tools and techniques have been approved by international organizations (Ford, IBM, Xerox, and GE), which adopted them with a high level of commitment to reduce cost, deliver high quality goods and increased competitive performance through increased quality of products or service (Douglas and Judge, 2001).

Organizations that seek to be competitive and sustain their position in the market have to embrace certain practices, such as lowering costs, meeting customer requirements,

implementing continuous improvement, improving process redesign, reducing waste and rework, implementing constant measurement of results, fostering employee involvement and team work, undertaking competitive benchmarking, and improving close relationships with suppliers. According to the World Bank competitiveness report (WB, 2000):

“A firm is competitive if it can produce products and services of superior quality and lower costs than its domestic and international competitors.”

Gratton et al. (1999), showed that most highly performing companies believe that human resources, rather than financial or technological resources, can offer a competitive advantage. In order for a country to control its national destiny, it must first control its economic destiny. Quality has proved itself to be the key to economic success in today's world (Townsend and Gebhardt, 1992).

According to Feigenbaum (1990):

“In an increasingly competitive world, quality is no longer an optional extra, it is an essential strategy: without quality an organization cannot survive. The generation of quality products and services demand total commitment from the entire organisation: it requires TQM.”

This is consistent with the statement by John Young, President of Hewlett-Packard, who states that:

“In order to compete in a global economy, products, systems and services must be of a higher quality than our competition. Increasing Total Quality is our number one priority here at Hewlett-Packard.”

According to Juran (1974), the needs of competitiveness thus stretch well beyond the front-line enterprises that face international rivals to cover other enterprises, activities, institutions and policies. These requirements apply to developing countries as much as to mature economies. For many latecomers to industry that lack the capabilities, structures and institutions needed, the stresses of globalisation can be enormous. For those that can meet these needs, the opportunities for growth are considerable.

Proponents of Total Quality Management (TQM), (Dale, 2003; Kanji and Moura, 2001; Oakland, 2000), emphasize its many internal and external benefits, such as improved business results, customer and employee satisfaction, the positive impact on society, improved management and enhanced leadership skills. They believe that the TQM principles of total quality will remain the cornerstone of good management. Adopting the TQM philosophy will:

- make an organisation more competitive
- establish a new culture which will enable growth and longevity
- identify customer needs and set standards that are consistent with customer requirements
- provide a working environment in which everyone can succeed
- reduce stress, waste and friction
- build teams, partnerships and co-operation

In a survey conducted by the Council of State Governments (CSG), USA 1994 in 50 states to investigate and highlight the status of TQM activities in state Government, the report findings revealed that TQM activities had been initiated for the following reasons:

1. To reduce costs of management and delivery of services.
2. To use the talent of front-line employees in management and decision-making.
3. To enhance images of the organisations.
4. To improve employee morale, skills and productivity.
5. To change traditional management style.
6. To deal with complaints from customers.
7. As a part of strategic planning activities.

3.6.3 What is required to establish TQM?

Organizations which are implementing TQM should have a clear vision for the future and stay focused on it, through the implementation of the organization's mission. It can be a powerful technique for supporting and releasing employees' creativity and

potential, reducing bureaucracy and costs, improving productivity, and introducing quality service to customers and the community (Dahlgaard et al., 2002; Dale, 2003).

Dahlgaard et al. (2002), emphasize that TQM implementation requires a change in the way in which businesses operate, and contend that there is no standard recipe for a good TQM programme. But the quality gurus provide the core assumptions of the TQM philosophy, and assume that quality is the outcome of all the activities that take place within an organization. The following points are a distillation of the different beliefs of some of the quality experts (Crosby, 1979; Dahlgaard et al., 2002; Dale, 1994b; Deming, 1986; Feigenbaum, 1983; Garvin, 1988; Juran, 1995; Oakland, 2000; 1993; Taguchi, 1986; Wilkinson et al., 1998; Zairi et al., 1994; Hellsten and Klefsjö, 2000):

- Top management's direct involvement in the delivery of quality;
- Management structures have to be more consultative and less hierarchical;
- Commitment to TQM must be backed by action, which the employees and the customers can see and experience;
- Meeting and exceeding customer needs is a clearly stated aim and the highest priority;
- The organization should establish a long-term commitment to continuous improvement;
- Commitment to the process must be led by the senior management of the business;
- TQM requires consistent and precise performance to high standards in all areas of the organization;
- The organization should adopt modern methods of supervising and training, and should constantly educate and retrain – develop experts in the organisation;
- Communication links between workers and management, and between the business and all aspects of the supply chain must be excellent;
- Each individual should have the opportunity to participate, contribute and develop a sense of ownership, eliminate barriers between departments, and eliminate fear;

- Workers have to be empowered to be able to make decisions at all levels of the organization;
- Mutual respect, mutual trust and mutual benefits of all stakeholders are important factors within the development of any Total Quality organization;
- Reliable data and information should be used to make decisions;
- Products or services should not be bought on price alone – look at the quality and total cost.

Juran (1974), noted the following points to create quality environment:

- Governments must provide appropriate framework conditions: security, good macro-economic management, sound and enforceable legal and property rights, transparent and predictable policies, well-functioning institutions and a business environment with low transaction costs.
- Suppliers of physical and service inputs and infrastructure must meet international standards of cost, quality and delivery.
- Markets for labour, capital and information, along with their supporting institutions, must work reasonably efficiently. There must be a competitive environment that stimulates firms to invest in capabilities.
- Firms must be willing to invest in building new capabilities, mounting competitive strategies and developing the networks and clusters they need for efficiency and dynamism.

3.6.4 Total Quality Management (TQM) Definition

Many definitions of a TQM depend upon the background of the scholar or researcher and their field of interest. Some approaches have concentrated on such issues as human resources (Wilkinson et al., 1998); culture (Schein, 1992); leadership (Peters and Waterman, 1982); or corporate vision (Brown and Svenson, 1990). (Feigenbaum, 1983) created the “Total Quality” concept in the 1950’s and defined total quality control (TQC) as follows:

“An effective system for integrating the quality-development, quality maintenance and quality-improvement efforts of the various groups in an

organization so as to enable marketing, engineering, production, and service at the most economical levels which allow for full customer satisfaction.”

Oakland (2003) has defined TQM as:

“A comprehensive approach for improving competitiveness and flexibility through planning, organising and understanding each activity, and involving everyone at each level. TQM ensures that the management adopt a strategic overview of quality and focus on prevention rather than inspection.”

Dale (2003) has defined TQM as:

“A management approach that ensures mutual co-operation of everyone in an organisation and associated business processes to produce products and services that meet and, hopefully, exceed the needs and expectations of customers.”

Hellsten & Kldfsjo Klefsjö (2000) define TQM as:

“A continuously evolving management system consisting of values methodologies and tools, the aim of which is to increase external and internal customer satisfaction with a reduced amount of resources.”

This definition could lead to a good implementation plan, i.e. to start with the identification of core values, and then choose the best methods of implementation to support the values of the organisation and employees. Management and employees should be well trained to use the right tools to analyse and measure data.

3.6.5 Leaders in the Quality Movement

The quality leaders of the early, middle and late 20th century have made a significant impact on the world through their contributions to improving quality, in organisations and business. Although the quality improvement movement, technically originated in the West, specifically in America, its first main success was in Japan. Only after Japanese companies adopted quality management and significantly increased their

competitiveness was the quality idea implemented and progressed among Western companies.

The quality leaders – Dr. Walter A. Shewhart, Dr. W. Edwards Deming, Dr. Joseph Juran, Philip Crosby, Armand V. Feigenbaum, Dr. Kaoru Ishikawa, Dr. Genichi Taguchi and others, have made a significant impact on the world through their contributions to improving quality theories and practices.

- **Walter A. Shewhart (1891 - 1967)**

Shewhart was the most influential early American contributor to quality management, His famous book Economic Control of Quality of Manufactured Product was published in 1931. In this book, Shewhart suggested that better quality can be achieved by focusing on the production process instead of conducting excessive inspections. He concluded that this shift from inspection to process analysis provides the basis for cost reductions.

- **W. Edwards Deming (1900 - 1993)**

Deming was an American statistician, who contributed to the recovery of Japanese industry after World War II. His ideas were very well received by Japanese managers and engineers and led the Japanese quality revolution.

Deming stresses the responsibilities of top management to take the lead in changing processes and systems. According to his theory, top management is responsible for most quality problems and he points out that only 15% of quality problems are actually due to worker error, the remaining 85% being caused by processes and systems. He emphasized that management should give employees clear standards for what is considered acceptable work, and provide the methods to achieve it. Deming offered theories, ways of thinking, and methods to enable managers to lead people rather than to manage machines and numbers. His principle of quality management can be organized into seven groups:

- (1) The system of profound knowledge,
- (2) The Plan-Do-Check-Act Cycle,

- (3) Prevention by process improvement,
- (4) The chain reaction of quality improvement,
- (5) Common and Special Cause variations,
- (6) The fourteen points, and ,
- (7) The deadly and dreadful management diseases.

- **Joseph Juran (1904 -)**

Juran believes that quality does not happen by accident, it must be planned. According to him, it is very important to understand customer needs. This requirement applies to all those involved in marketing, design, manufacture, and services. Identifying customer needs requires more vigorous analysis and understanding to ensure the product meets customers’ needs and is fit for its intended use, not just meeting product specifications. He developed a management trilogy that included quality planning, control, and improvement (Table 3-4).

Table 3-4: Juran Quality Trilogy

Quality planning	<ul style="list-style-type: none"> Identify who the customers are. Determine the needs of those customers. Translate those needs into our language. Develop a product feature so as to meet our needs and customer needs.
Quality control	<ul style="list-style-type: none"> Prove that the process can produce the product under operating conditions with minimal inspection. Transfer the process to operation.
Quality improvement	<ul style="list-style-type: none"> Develop a process which is able to produce the product. Optimise the process.

Juran is also credited with developing the concept of cost of quality, which allows organizations to measure quality in financial terms rather than on the basis of subjective evaluations. Juran warns that there are no shortcuts to quality. He believes that the

majority (80%) of quality problems are the fault of poor management, rather than poor workmanship on the shop floor.

- **Philip Crosby (1926 - 2001)**

Crosby (1984), defines quality as conformance to requirements, and those requirements must be defined in measurable and clearly stated terms. He believes that quality is either present or absent and developed the phrase *“Do it right the first time”* and the notion of *zero defects*, arguing that no amount of defects should be considered acceptable. Crosby scorned the idea that a small number of defects are a normal part of the operating process because systems and workers are imperfect. Instead, he stressed the idea of prevention.

Crosby’s “four absolutes of quality” form the cornerstone of his process:

- Quality is conformance to the requirements: Management must communicate in clear terms to employees all the actions that are necessary to run an organization, produce a product or service and deal with customers and help them comply through leadership, training and cultivating a culture of cooperation in the organization.
- Prevention is the system of quality: The only system that produces quality is prevention since eliminating errors after they occur is costly. Crosby’s approach to prevention involves training, leadership, discipline and example. Thus, management must commit itself to a culture that is prevention-oriented.
- Zero defect is the performance standard: This is in line with Crosby’s fundamental view about quality and its generation. Management has a duty to provide employees with the tools, skills and other resources to facilitate the production of zero-defect products and services.
- Price of non-conformance is the measure of quality: Crosby believes that if management adheres to these “four absolutes of quality,” they will succeed in decreasing the costs as quality improves, leading him to state that “quality is free but not a gift”.

He claims *“mistakes are caused by two factors: lack of knowledge and lack of attention”*. Education and training can eliminate the first cause, and a personal commitment to excellence (zero defects) and attention to detail will cure the second.

- **Armand V. Feigenbaum (1920 -)**

Feigenbaum is the originator of Total Quality Control. He sees quality control as a business method rather than looking at it technically, and believes that quality has become the single most important force leading to organizational success and growth. In his 1961 book Total Quality Control, he defines quality as:

“total composite product and service characteristics of marketing, engineering, manufacture and maintenance through which the product and service in use will meet the expectations of the customer.” (Feigenbaum, 1983)

He states that total quality management covers the full scope of the product and service “life cycle” from product conception through production to customer service. The quality chain, he argues, starts with the identification of all customers’ requirements and ends only when the product or service is delivered to the customer who remains satisfied. Thus, all functional activities, such as marketing, design, engineering, purchasing, manufacturing, inspection, shipping, accounting, installation, and service, etc., are involved in, and influence, the attainment of quality. Effective total quality control requires, therefore, a high degree of functional integration. Furthermore, it guides the coordinated actions of people, machines and information to achieve quality goals. Feigenbaum stresses a system approach to quality and his philosophy is summarized in his Three Steps to Quality:

- Quality Leadership
- Modern Quality Technology
- Organizational Commitment

Like most other ‘quality leaders’ Feigenbaum considers effective staff training and education to be essential components of TQM. He states that education and training

should address the three vital areas of quality attitudes, quality knowledge and quality skills.

- **Kaoru Ishikawa (1915 - 1989)**

Ishikawa is the most famous Japanese contributor and widely regarded as the father and pioneer of the “quality circles” in Japan in the 60’s. He has paid particular attention to making the statistical techniques used in quality attainment accessible to those in industry. He defined seven tools of quality management, mainly based on applied statistics, which are the Pareto chart, the cause and effect diagram, the stratification, the check sheet, the histogram, the scatter diagram, and the Shewhart control chart. As well as technical contributions to quality, Ishikawa is associated with the Company-Wide Quality Control (CWQC) movement that started in Japan during the period 1955-1960 following the visits of Deming and Juran. Ishikawa sees that quality does not only mean the quality of product, but also after sales service, quality of management, the company itself and human life. Some key elements of Ishikawa’s philosophy are:

- Quality begins with education and ends with education.
- The first step in quality is to know the requirements of customers.
- The ideal state of quality control occurs when inspection is no longer necessary.
- Remove the root cause, not the symptoms.
- Quality control is the responsibility of all workers and all divisions.
- Do not confuse the means with the objectives.
- Put quality first and set your sights on long-term profits.
- Marketing is the entrance and exit of quality.
- Top management must not show anger when facts are presented by subordinates.
- Ninety-five percent of problems in a company can be solved with simple tools for analysis and problem solving.
- Data without dispersion of information are false data.

Genichi Taguchi

3.6.5.1 Dr. Genichi Taguchi is a Japanese quality expert known for his work in the area of product design. Taguchi made a significant contribution to the development of industrial standards in Japan by applying statistical methods for the improvement of products and processes generally. He estimates that as much as 80% of all defective items are caused by poor product design. Taguchi stresses that companies should focus their quality efforts on the design stage, as it is much cheaper and easier to make changes during the product design stage than later during the production process. He defines quality as the “*loss imparted to the society from the time a product is shipped*”. The loss function has implications for quality costs. Traditionally, if a product characteristic falls outside specification limits, it will increase the cost of poor quality. Taguchi's contribution to quality consists of what is called Taguchi loss functions, also design of experiment. Design of experiment is an engineering approach which is based on developing robust design; this is a design which results in a product which can perform over a wide range of conditions.

After reviewing the quality leaders' approaches to TQM, it is clear that although each has his own distinctive approach, there are some common factors which are discussed below.

- It is management's responsibility to:
 - have clear vision, clear communication and commitment;
 - create a good working environment to enable employees to participate efficiently in process improvement;
 - empower employees by involving them and encouraging them to be the owners of every process;
 - provide appropriate support to technical and human processes;
 - provide enough resources to fulfil quality plans.

- **The importance of education and training:** It is necessary to change employees' beliefs and attitudes towards better participation and improvement at all levels and to increase their competencies in carrying out their duties.
- **The importance of controlling:** the process and not the product. There needs to be an emphasis on the prevention of product defects, reducing inspection time and reducing the costs of quality to improve competitiveness;
- **Planning and data collection and measurement:**
- **Decisions are backed up by facts and figures;**
- **The importance of continuous improvement;**
- **The importance of supplier and customer relations.**

Kess et al. (2001), suggested that when we study the ideas of the quality leaders it is necessary to realize that their approaches have their limitations and drawbacks. They have been a starting point for many current quality philosophies and can provide direction in quality thinking

3.6.6 TQM Frameworks Based on Quality Awards

Quality award models have stimulated considerable interest in quality management and provided guidelines for organizations seeking to introduce quality management. The notion of self-assessment has been adopted by companies throughout the world as a mechanism for guiding the development of such quality activities.

Ghobadian and Woo (1996), described the main aims of the quality awards as the ability to:

- **Increase awareness of TQM** because of its important contribution to superior competitiveness;
- **Encourage systematic self-assessment** against established criteria and market awareness simultaneously;
- **Stimulate sharing and dissemination of information** on successfully deployed quality strategies and on benefits derived from implementing these strategies;

- Promote understanding of the requirements for the attainment of quality excellence and successful deployment of TQM;
- Encourage firms to introduce a continuous improvement process.

3.6.6.1 Feedback to Applicants

Each award applicant receives a feedback report at the conclusion of the review process. The feedback report is a written assessment by an evaluation team of leading quality experts and contains an applicant-specific listing of strengths and opportunities for improvement based on the criteria. Feedback is one of the most important parts of the awards process; it provides a pathway for improvement and helps organizations focus on their customers and improve overall performance.

Two key aspects of the quality awards are the promotion of best practice sharing and the establishment of a benchmark for quality systems that focused on customer satisfaction as a primary driver of business design and execution

3.6.6.2 Quality awards

The three most frequently used self-assessment models have been Japan's Deming Application Prize, the Malcolm Baldrige National Quality Award, and the European Quality Award.

The Deming Prize: was established in 1951, by the Union of Japanese Scientists and Engineers (JUSE) to commemorate Dr. W. Edwards Deming's contribution to Japanese industry and to promote further the continued development of company-wide quality control in Japan.

The Deming Prize is an award given annually to organizations that, according to the award guidelines, have successfully applied company-wide quality control based on statistical quality control and will keep up with it in the future. Although the award is named in honour of Dr. W. Edwards Deming, its criteria are not specifically related to Deming's teachings. There are three separate divisions for the award: the Deming

Application Prize, the Deming Prize for Individuals, and the Deming Prize for Overseas Companies.

- **Deming Prize-The Criteria**

- Top Management Leadership, Vision, Strategies
- TQM Frameworks
- Quality Assurance Systems
- Management Systems for Business Elements
- Human Resource Development
- Effective Utilisation of Information
- TQM Concepts and Values
- Scientific Methods
- Organisational Powers (Core Technology, Speed, Vitality)
- Contribution to Realisation of Corporate Objectives

Malcolm Baldrige National Quality Award. (MBNQA)

MBNQA is an annual American quality award that was established by Congress in 1987 to enhance US competitiveness. The award programme promotes quality awareness, recognizes quality achievements of US companies and provides a vehicle for sharing successful strategies. The Baldrige Award criteria focus on results and continuous improvement. They provide a framework for designing, implementing, and assessing a process for managing all business operations. Table 3-5 shows the MBNQA criteria.

Table 3-5: Descriptions of the seven criteria of MBNQA

Leadership	Examines how senior executives guide the organization and how the organization addresses its responsibilities to the public and practices good citizenship.
Strategic planning	Examines how the organization sets strategic directions and how it determines key action plans.
Customer and market focus	Examines how the organization determines requirements and expectations of customers and markets.
Measurement, and knowledge management	Examines the management, effective use, analysis and improvement of data and information to support key organization processes, and the organization's performance management system.
Human resource focus	Examines how the organization enables its workforce to develop its full potential and how the workforce is aligned with the organization's objectives.
Process management	Examines aspects of how key production/delivery and support processes are designed, managed, and improved.
Business results	Examines the organization's performance and improvement in its key business areas: customer satisfaction, financial and marketplace performance,

- **The European Foundation for Quality Management Model**

3.6.6.3 (EFQM Model)

EFQM was founded in 1988 to promote self-assessment as a key process for driving business improvement in European countries.

The European Quality Award was first presented in Europe in 1992 to honour the most successful exponent of Total Quality Management (TQM). To receive the award, an applicant must demonstrate that its approach to TQM has contributed significantly over the past few years to satisfying the expectations of customers, employees and others with an interest in the company.

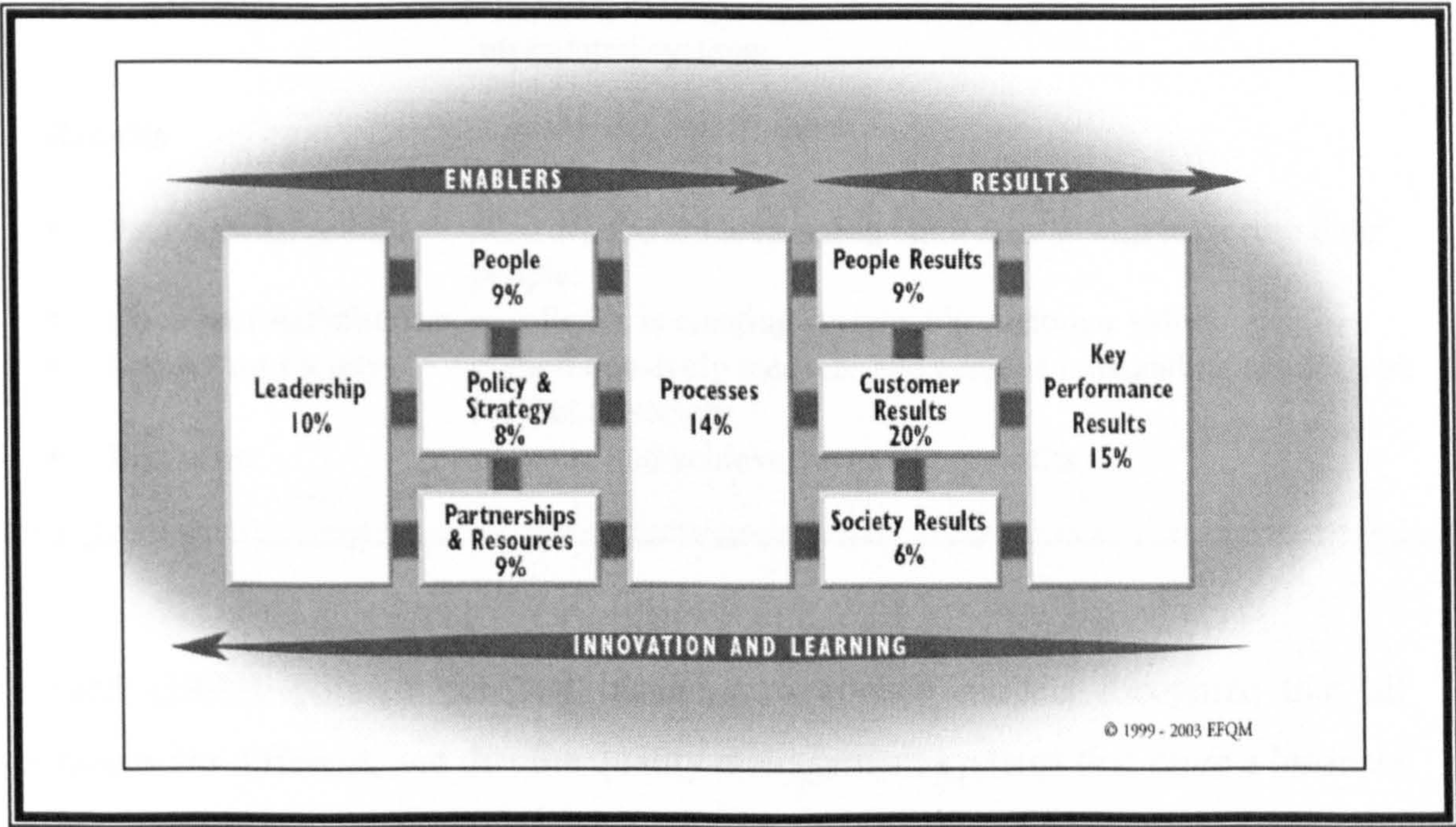
○ EFQM and Self-Assessment

EFQM has also developed a business excellence model that offers a standards approach to quality management. The excellence model can evaluate objectively an organisation's management system, identify areas for possible improvement, and compare the organisation with others, by using benchmarking. The model is the key in four ways:

- As a framework which organisations can use to help them develop their vision and goals for the future in a tangible, measurable way
- As a framework which organisations can use to help them identify and understand the systemic nature of their business, the key linkages and cause and effect relationships?
- As the basis for the European Quality Award, a process which allows Europe to recognise its most successful organisations and promote them as role models of excellence from which others can learn.
- As a diagnostic tool for assessing the current health of the organisation. Through this process an organisation is better able to balance its priorities, allocate resources and generate realistic business plans.

The EFQM Excellence Model consists of nine criteria, see Figure 3-3. The five criteria on the left-hand side of the figure are called “Enablers” and are concerned with how the

organization performs various activities. According to Hillman (1994:29), the enablers are those processes and systems that “*need to be in place and managed to deliver total quality*”. The four criteria on the right of Figure 3-3 are concerned with the “Results” the organization is achieving with respect to different stakeholders. These criteria are weighted to reflect their individual importance but the sum of the scores for the criteria making up the enablers and results each represents 50% of the total. Figure 3-3 shows the Enablers and Results Criteria for EFQM Excellence Model, while table 3-6 describes the nine Criteria for the EFQM Model.



Source: ISO Organisation

Figure 3-3: EFQM Excellence Model Criteria

The EFQM Model for Business Excellence could be a key framework for helping Libyan companies in their drive towards being more competitive. Table 3-6 below gives a description of the EFQM model Nine Criteria.

Table 3-6: Description of the Nine Criteria for EFQM model

Enablers	
• Leadership:	develop and facilitate the achievement of the mission and vision.
• Resources:	excellent organisations plan to manage external and internal resources in order to support policy and strategy.
• Policy and strategy:	policies, plans, objectives and processes are developed and deployed.
• People management:	manage, develop and release the full potential of their people at an individual, team-based and organisational level
• Processes:	managing the organisation through a set of interdependent and interrelated systems.
Results	
• People satisfaction:	measure and achieve outstanding results with respect to their people.
• Customer satisfaction:	excellence is creating sustainable customer value.
• Impact on society:	comprehensively measure and achieve outstanding results with respect to society.
• Business:	measure and achieve outstanding results

Burchell (1999), pointed out that business excellence models recognize that all businesses are different, and that the quality management systems that drive a business toward excellence must be specifically tailored for each individual organisation. The EFQM model was adopted for the Dubai Quality Award and many companies in Dubai have benefitted from that and won Dubai Quality Awards.

3.7 Quality management system (ISO 9000)

The ISO 9000 series is an internationally recognized quality assurance and management system. It aims to give customers confidence in their suppliers by assuring them that they have in place management processes that deliver consistency. It encourages but does not of itself directly assure product quality. ISO 9000:2000 was intended to enhance customer satisfaction and to provide the basis for continuous improvement in

the performance of the organization. It enables global trade and commerce under the World Trade Organization dispensation and involves writing procedures, following them, and auditing (by both internal people and an external body) how well they are being followed. ISO 9000:2000 came as a result of the feedback from about 1000 advanced organizations worldwide that had already implemented ISO 9000:94 and knew what changes were needed to successfully raise the standard of process management practices. Table 3.7 shows the ISO 9000:2000 structure.

Table 3-7: ISO 9000:2000 structure

Standards and guidelines	Purpose
ISO 9000:2000, Quality management systems - Fundamentals and vocabulary	Establishes a starting point for understanding the standards and defines the fundamental terms and definitions used in the ISO 9000 family which you need to avoid misunderstandings in their use.
ISO 9001:2000, Quality management systems - Requirements	<p>This is the requirement standard you use to assess your ability to meet customer and applicable regulatory requirements and thereby address customer satisfaction.</p> <p>It is now the only standard in the ISO 9000 family against which third-party certification can be carried.</p>
ISO 9004:2000, Quality management systems - Guidelines for performance improvements	This guideline standard provides guidance for continual improvement of your quality management system to benefit all parties through sustained customer satisfaction.

If ISO 9001:2000 is well implemented, improvements could result through smoother operations and the ability to identify problem areas easier, but there is no cookbook approach to adopting the ISO tools. Therefore, each company should create its own recipe in order to implement a successful quality methodology (Suzik, 1999). The

requirements framework (ISO 9001) basically consists of four major elements, namely: 1. Management responsibility, 2. Resources management, 3. Product realization, 4. Measurement, Analysis and Improvement. Table 3-8 shows the ISO 9001 elements and the clauses required by each element.

Table 3-8: ISO 9001 implementation requirements clauses

ISO9001:2000 Requirements	
4. Quality management system	
4.1 General requirements	The organization shall identify critical processes and elaborate controlled procedures, including a quality manual
4.2 Documentation requirements	
5. Management responsibility	
5.1 Management commitment	Top management shall demonstrate its commitment to the QMS, establishing policies, objectives and plans and ensuring the achievement of customers and legal requirements. The organization shall define responsibilities and authorities and establish an effective internal communication system.
5.2 Customer focus	
5.3 Quality policy	
5.4 Planning	
5.5 Responsibility, authority and communication	
5.6 Management Review	
6. Resource management	
6.1 Provision of resources	Top management must identify where resources are needed and provide them in a timely manner, including human resources, infrastructure and continual education.
6.2.Human Resources	
6.3 Infrastructure	
6.4 Work Environment	
7. Product realization	
7.1 Planning of product realization	The organization shall identify, plan and implement processes under controlled conditions to realize the services/products. Purchased products should meet the organization's specifications. Customer requirements must be identified and assured during the process.
7.2.Customer-related processes	
7.3 Design and development	
7.4 Purchasing	
7.5 Production and service operations	
7.6 Control of measuring and monitoring devices	
8. Measurement, analysis and improvement	
8.1 General requirements	The organization must implement methods to monitor, measure and analyze processes and customer satisfaction. Non-conformities must be identified and corrective actions taken. Continual improvement and preventive action should be pursued.
8.2. Measurement and monitoring	
8.3 Control of nonconformity	
8.4 Analysis of Data	
8.5 Improvement	

Note: the heading numbers in this table are not related to the heading numbers in the thesis chapters. These clause numbers are required by ISO 9000:2000 standards

Implementing the requirements in Table 3-8 to gain ISO 9001 registration or certification should be viewed as a minimum requirement. For implementing a quality management system or for registration purposes, the objective should be the continuous development and improvement to transfer the organisation to a TQM culture. Hoyle (1994), made the following statement on the value of ISO 9000 certification:

“ISO 9000 is only a beginning; it provides a mechanism with which to bring about systematic improvement but it does not improve performance by itself.”

The 2000 version of ISO 9000 represents a fundamental shift from quality assurance to quality management, a significant change in approach to quality from one that is totally compliance based to one that includes the evaluation of management techniques. This change has been described as moving the standard away from a technical-practical tool toward a management one. Heras *et al.* (2002), suggest that ISO 9000 presents a sound basis for assuring the customer of quality of products and services, as well as the processes that create them.

ISO 9001:2000 when used alongside ISO 9004:2000 is a significant step forward in making the system more effective and efficient, which provide basic inputs for continuous quality improvement and which can be used as a basis for TQM culture (Ho, 2002; Sun, 2000). Many recent studies reported that when the organization seeks certification for reasons beyond regulatory or customer requirements and sees the standards as an opportunity to organize and improve their internal operations and quality by emphasizing customer needs, employee involvement and continuous improvements can easily and steadily move into the TQM implementation stage (Anderson et al., 1999; Gotzamani and Tsiotras, 2002; Poksinska et al., 2002; Withers and Ebrahimpour, 2001).

3.8 Developing Countries - Quality Management Experience

In the increasingly changing and competitive world, interest in Total Quality Management (TQM) continues to grow as more and more organizations from all corners of the globe demonstrate the positive impact on performance and

competitiveness of implementing TQM. Developed and developing countries are at different stages of the quality movement (Baldinger, 1990; Sarkar, 1990; Sohal et al., 1989). In developed countries the quality movement has been underway for quite some time. On the other hand, in the developing countries the quality movement has been more recent due to:

1. changes in their economic and trading policies;
2. opening their markets to the free market system; and,
3. competing in international markets.

There may be opportunities for developing countries to learn from the successes and failures in the quality practices of developed countries. Developing countries will become potential competitors to them sooner or later and at the same time offer a potential market to them (Raghunathan et al., 1997). Therefore, it is important to understand the status, commonalities and differences of quality practices in developed and developing countries to facilitate insights into quality management practices in an international context.

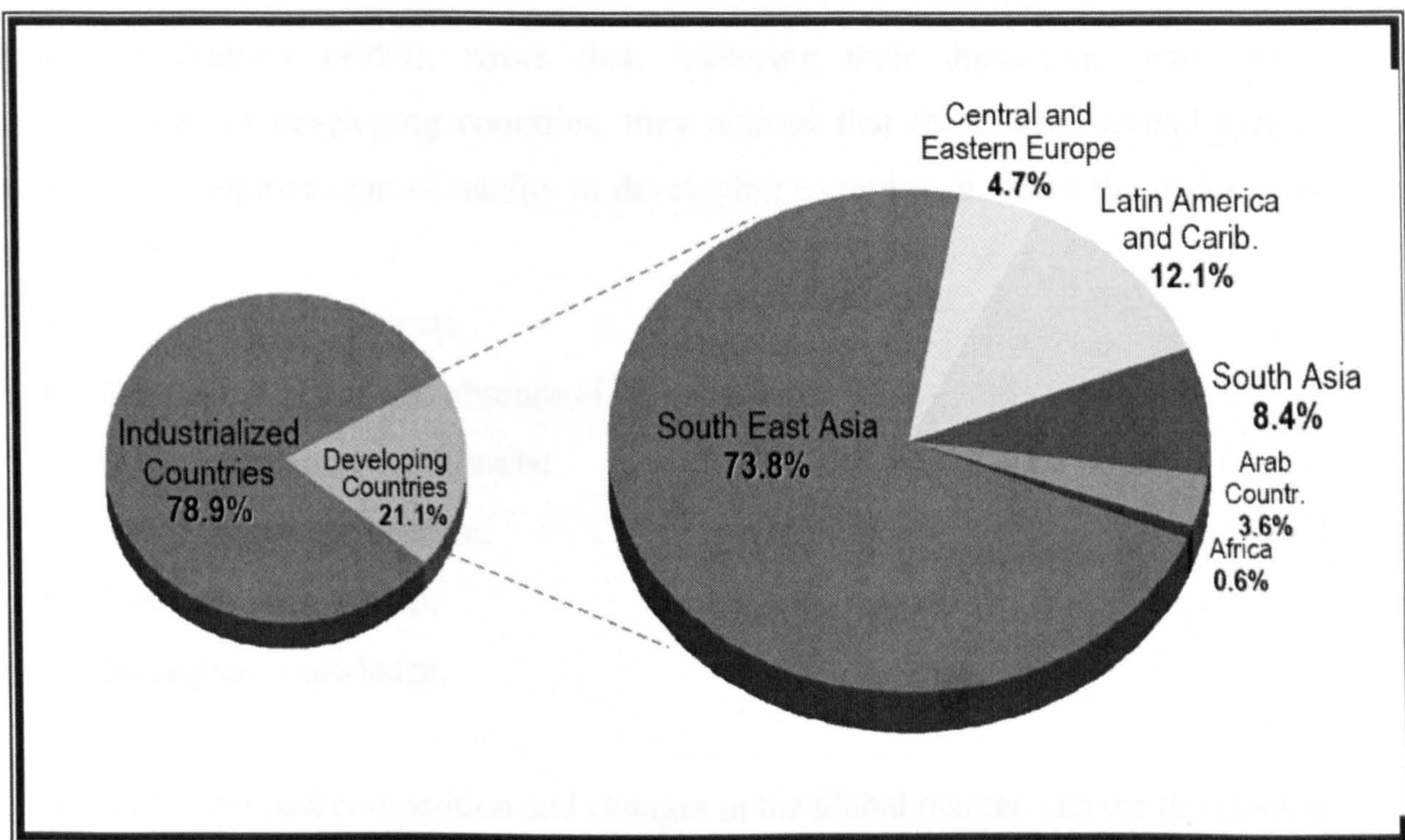
Farashahi (1999), pointed out that the management systems in developing countries have the following characteristics:

- Less sensitivity or sometimes even no response to competition and economic objectives.
- Very sensitive to social relations and political objectives.
- Significantly concerned about informal organizations, and used to working with less codified signals.
- Less sensitive to small internal and external changes.
- Used to making fewer decisions.

In most of the developing countries excluding South East Asia there is poor quality management and standards, Figure 3-4 and a lack of awareness of the quality benefits. Quality is regarded as a socially desirable objective, but its contribution to the profitability of any business is considered marginal. According to Mossa (2001), Sohal

and Ritter (1995), Quazi and Padibjo (1998), and Ghosh and Wee (1996), this results a number of misconceptions about the pursuit of quality management such as:

- It has higher quality costs;
- It emphasises quality leads to reduced productivity;
- The labour force is entirely to blame for poor quality;
- Requires large investments;
- Quality can be assured by strict inspection.



Adopted from ISO 2002

Figure 3-4: ISO standards implementation in developing countries

Most organisations in the developing countries except for a few in East Asia and the Middle East suffer from:

- Lack of management commitment and motivations;

- Lack of employee involvement and participation in quality improvement efforts;
- Perception that quality is an optional extra and not a necessity for development;
- Traditional belief that “Quality costs money”;
- Lack of political support;
- Lack of established quality standards and inadequate test facilities;
- Obsolete technologies.

3.8.1 Quality Improvement Barriers in Developing Countries

Juran and Godfrey (1999), wrote that, following their discussions with many representatives of developing countries, they noticed that there were several factors impeding the improvement of quality in developing countries of which the major ones seemed to be:

- Low purchasing power;
- Shortage of goods and absence of competition;
- Foreign exchange constraints;
- Incomplete infrastructure;
- Inadequate leadership;
- Inadequate knowledge.

Today, with increased competition and changes in the global market, can the developing countries survive if they stick with the same approach to business? Crosby (1995), stated that nothing is more important to the prosperity of a developing nation than quality. The only way for developing nations to increase their trade activities and develop in a sustainable way, is to improve the quality of their products and services. Developing countries should lay out some simple strategies to start with, and should start a national quality campaign to raise the awareness of quality in different layers of the national organizations, and maybe they should impose some quality laws to reach a certain level of maturity (Zairi, 2002).

The following sections will give a brief outline of the perception and implementation of the quality management systems in some developing countries. It will concentrate on those countries that are close to the Libyan culture and have been moving in the direction of improved quality.

3.8.2 Quality Movement in the Arab Countries

Some of the Arab countries are fairly industrialised with a reasonable skills base and infrastructure and good access to foreign technology. Often, however, their industrial and export structures are not geared to technology upgrading, and their technological effort is therefore weak. Also their approach to management is often not well developed, and is affected by internal culture and social life (Al-Hamdany, 1999; Al-Zamany et al., 2001; Zairi, 1996).

Although excellent? efforts have been made in many Arabian Gulf countries such as Dubai, Bahrain and Saudi Arabia in the area of developing standards, recent studies have revealed that Arab countries generally lag behind when it comes to ISO 9000 certifications and TQM implementation when compared to both developed and developing nations, (Al-Omem (2002); Al-Dabal (1999); Al-Qahtani (1993) in Saudi Arabia; Al-Khalifa and Aspinwall (2000) in Qatar; Al-Hamdany (1999); Al-Zamany et al. (2002) in Yemen; Al-Khawaldeh (2002) in Jordan; Hesham Magd (2003) in Egypt; and, Najeh and Kara-Zaitri (2004) in Libya).

According to these studies, most of the Arab countries are still in the early stages of implementing quality management initiatives (QMS & TQM) and share the same constraints namely:

- Lack of management commitment, vision and planning, and a lack of constancy of purpose – no long-term plans for staying in business and being satisfied? with the quick fix;
- Incompetence of top and middle management in the quality management field;
- Awareness and understanding of TQM was at a minimal level in most cases;
- Main TQM success factors were not well-known or practiced;

- Managers give very little attention to strategic planning and they focus mainly on those urgent matters that appear while performing the job;
- Poor organization and inadequate reporting and information systems at the central, district and peripheral levels; logistical difficulties mainly due to inadequate supplies and equipment;
- The most common reason for seeking certification was to respond to the pressures from competitors/foreign partners;
- A clear lack of supplier partnerships, where suppliers are not considered to be of paramount importance.

Zairi (1996), noted that Arab managers and governments unfortunately believe that ISO 9000 registration will bring miracles with it and can lead to superior competitiveness. He states that:

“All Arab countries have to deal with these levels of misconception and poor understanding. ISO 9000 is only a license to practice and only represents one pillar of the TQM philosophy. It is an essential element but not sufficient on its own”.

3.8.2.1 Quality Movement in the United Arab Emirates

Dubai, where there is a good leadership support for quality activities is the best Arab example of introducing quality management systems and total quality management. The researcher visited the Dubai quality award authority on the 14th of September 2002 to discuss how TQM was introduced to different organisations in the United Arab Emirates (UAE) and how local companies adopt the concepts of (QMS & TQM). The Quality Advisor in the Department of Economic Development mentioned that:

“The Dubai quality award is designed to help organisations in Dubai to position all their quality activities and most importantly provide them with the mechanism to measure their performance.”

Since its inception in 1994, the Dubai Quality Award continues to be the driving force behind the quality and continuous improvement movement in the country. It is considered by many as the quality roadmap for all organizations operating in the

Emirate and is leading the city towards becoming a true world class centre in every respect. The Dubai Quality Award Secretariat (DQAS) sought international comparability through making the Dubai Quality Award criteria 2000 version fully compatible with the international best practices.

The Dubai Quality Award (DQA), Figure 3-5. Dubai Quality Appreciation Program (DQAP) and the Dubai Programme for Government Excellence have all contributed significantly to an improved awareness of quality issues in the business and government communities of the Emirate. The awards have also helped earn Dubai the standing of a global city and it has become the quality leader in the region. Not only have the awards promoted the continual development of the business community but they have also started to increase awareness in the public sector.

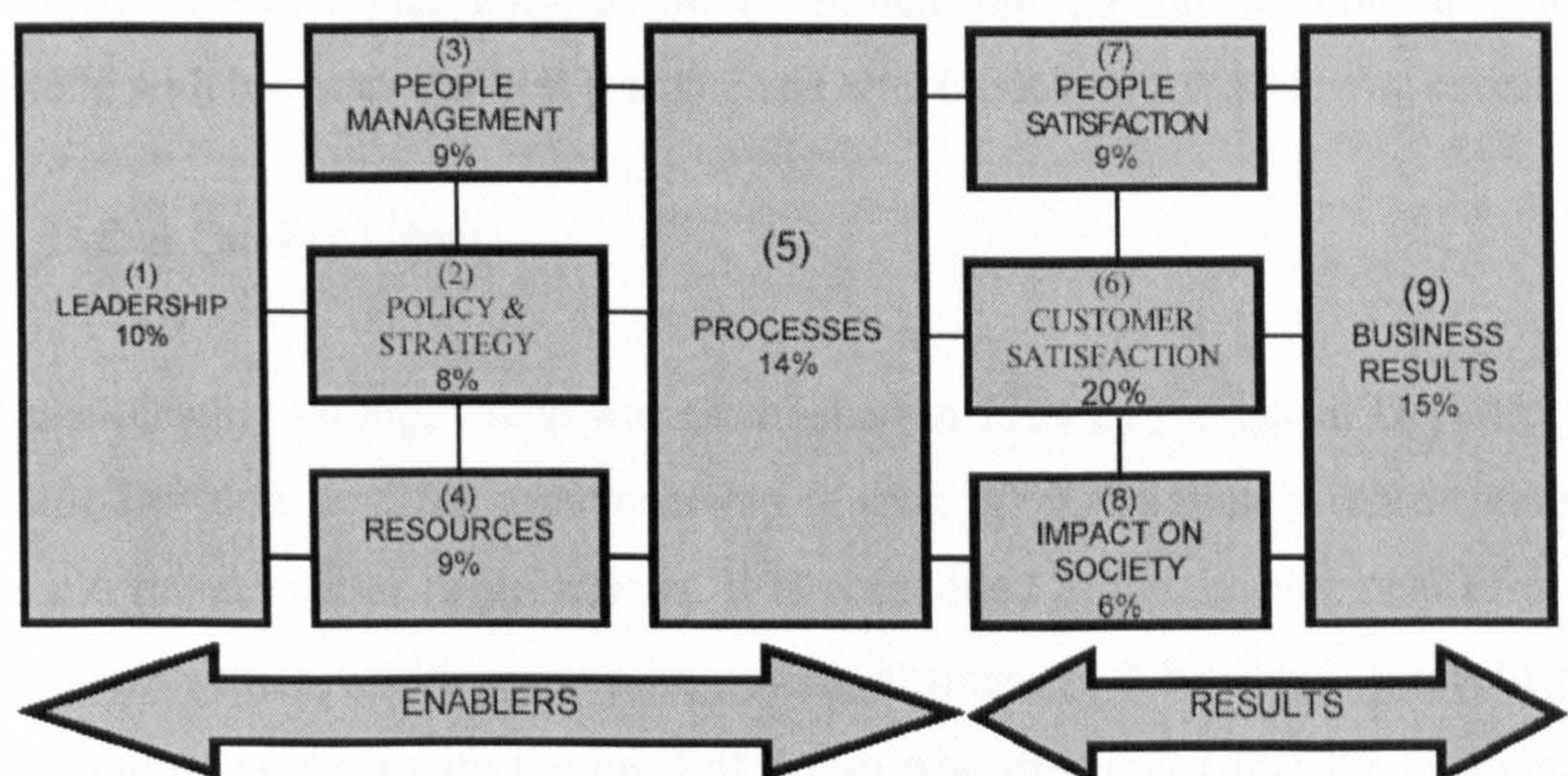


Figure 3-5: Dubai Quality Award Model Framework

The adoption of the Dubai Quality Award model and using its criteria as self assessments to measure the level of TQM implementation will help in improving Arab companies' performance and profitability in the following ways:

1. Setting more challenging and realistic targets;
2. Leaders and employees become a part of the company dream/vision/mission and hence they agree to the enhanced targets;

3. Leaders and employees become more competent and motivated to contribute their best in achieving the set and agreed policy and strategy;
4. Processes, Systems, Partners and Technology effectively support the people in the achievement of policy and strategy, including company profitability;
5. Improving customer satisfaction and market share;
6. Improving employee satisfaction;
7. Improving society satisfaction and company image;
8. Improve Key Performance Results by improving all the above.

A key advantage in applying for the award is the feedback report that all organizations receive. This indicates to an applicant's organization how closely its own assessment corresponds with that of the assessors, and will identify areas that are the strengths of the organization and areas where there are opportunities for improvement. The award also enables international comparability through the pursuit of criteria that are compatible with international best practice and a methodology for achieving excellence.

- **Dubai Quality Group**

The Dubai Quality Group, which was established in 1994 by the Dubai Department of Economic Development, has a membership of over 3000 individuals representing 600 public and private sector organizations. It is committed to the development of a well-educated and skilled workforce and improving business performance. A meeting was held (by the researcher) with the head of group who mentioned that the awareness of quality was becoming very high due to the unlimited support from the officials and leaders of Dubai.

Although most of the companies who participate and win the award are classified as western style companies, the competition environment that has resulted has encouraged many local companies to introduce (QMS & TQM) and progress to improve their management performance to high competitive levels.

The E-TQM College, a Dubai-based virtual university, was set to admit up to 50,000 online learners in 2004. It is designed to be the reservoir of knowledge in total quality

management for this region and a panel of one hundred experts will contribute to enhance the TQM knowledge base in the Arabic language.

3.8.2.2 New Quality Movement in Arab Countries

- **The Arab Organization for Quality**

The Arab Organization for Quality (AOQ) was formed in Dubai on March 17th 2006, under the auspices of the Arab League. The AOQ's aim will be to promote quality and business excellence throughout the Arab World through publications, teaching material, seminars, workshops and courses.

- **The Arab Quality Award (AQA)**

The AQA will run annually and will also be under the auspices of the Arab League. The award will be modelled on the international criteria for excellence and the Dubai Quality Award, which is aligned with the European Excellence Model. The AQA will become a process for recognizing role-model organizations in the Arab World in line with the internationally acclaimed criteria. The AQA will offer Arab organizations the necessary recognition, support and exposure in other role-model Arab countries as well as the ability to benchmark worldwide. The AOQ will also identify and facilitate knowledge transfer and the sharing of good practices from developed countries all over the world for the benefit of all participating Arab organizations

- **Dubai the fifth quality international hub**

In March 2006, Dubai was officially recognized as the fifth quality hub of the world and the headquarters of the Middle East Quality Association. This is a reflection of the UAE commitment towards quality and also highlights the significant role played by the UAE. The other four quality hubs are: America - The American Society for Quality (ASQ); Europe - European Organization for Quality (EOQ); Asia Pacific - Asia Pacific Quality Organization (APQO) and Japan - Japanese Union of Scientists and Engineers (JUSE).

The experience of the developed countries in the USA, Japan, Europe, and some of developing countries especially in South East Asia, provides an extremely useful guideline for Arab countries to develop the quality culture in their organizations.

3.8.3 Quality Movement in Eastern Europe

In order to study the quality position in Eastern Europe, consideration should be given to the cultural and the organizational environment and the requirements of implementing any change to the society (Blundell, 1994; Forker, 1990).

The Union of Soviet Socialist Republics (USSR) used to have a good system for quality control based on batch inspection of the final product and 100% inspection of incoming goods and material. In the 1970s this was a similar approach to quality that existed in the West (Hill and McKay, 1988). Nowadays, there is a big gap in the quality levels between them due, in large part, to developments in the West occurring in response to the Japanese economic threat while the USSR was busy managing its own political and economic problems. After the reforming of the USSR, and the shift to a market based economy, a massive transformation of management techniques and managerial culture (leadership style, workforce composition, training and career development) was needed to implement the change required to shift the countries of Eastern Europe towards competitive international standards. According to Child and Czegledy (1996), this transformation was a response to:

- The pressure of Market Economy;
- The pressure of the customer;
- The need and desire to compete at home against western imports;
- The need and desire to sell high-value goods on the international market;
- Joint ventures with international corporations.

Because of the market potential and the availability of a well-educated workforce at low cost, many quality reputable organizations such as (ABB, General Electric, General Motors, Hewlett- Packard, Honda, and Toyota) entered the Eastern European market

and formed local partnerships and joint ventures with local people. This involved the adoption of foreign quality approaches and standards, which have been developed over decades and which have enabled them to create products whose quality ranks among the best in the world (Dickenson et al., 2000).

Comprehensive research to examine how the transfer of management competencies facilitated economic and social change in the 1990s, (Dickenson et al., 2000; Mulej and Kazjer, 1996; Villinger, 1996), revealed some of the difficulties facing quality implementation in Eastern Europe including:

- overcoming cultural legacies such as the lack of worker involvement and the command economy;
- lack of resources preventing the uptake of western quality methods;
- lack of infrastructure to provide in-depth training that has limited the understanding of the necessary managerial techniques;
- quality management books on modern techniques and tools were not easy to find in the local languages;
- cost of upgrading the infrastructure to meet international standards and the initial and ongoing costs of certification was only possible for a small minority of organizations with financial capabilities;
- companies feeling left on their own to develop quality management systems, and to tackle the daunting task of certification;
- lack of quality management provision in higher education.

However, introducing a new concept such as total quality management required an awareness that the population has suffered from a dramatically poor quality of life for half a century and this often leads to poor quality of action (Lee, 1991).

3.8.4 Quality Movement in South – East Asia

In the developing world, East Asia is the best performer in most respects. It has the highest growth rates in production and export, is far more export-oriented and has a

more technologically advanced structure. For all the drivers of performance, the area is rapidly increasing its share and has a particularly commanding position in skill creation, research and development (R&D) and technology licensing.

The rapid movement of TQM into south-east Asia has largely been due to:

- governments determined to support quality change;
- changes in their economic and trading policies;
- opening to the free market system;
- competing in the international market.

The governments provided facilities and policy environments – e.g. privatisation, physical infrastructure, institutional support, extension of easy credit and the formulation of coherent policies – to allow entrepreneurs to thrive and excel.

Richard (2002), stated that:

“The Asian Tigers have had a leadership committed to competitive industrial development, complemented by a broad education base and a fairly equitable income distribution. The government bureaucracy was skilled and highly respected – more important, it was relatively insulated from day-to-day politics and able to respond pragmatically to change.”

In recent years, the ISO 9000 series of quality systems standards have become increasingly important and have been adopted as national standards in developing and newly industrialised countries in East Asia.

3.8.4.1 Quality Movement in Singapore

The formation of the National Science and Technology Board in Singapore (1991) marked a milestone in deliberate government policy to promote the development of science and technology (S&T). Singapore's S&T efforts have made much progress since then, with gross expenditure on research and development (R&D) growing from S\$757 million in 1991 to S\$3 billion in 2000. Singapore's manufacturing base has continued to move up the value-chain to more high-tech and knowledge-intensive

products. Underpinning this S&T effort is a growing and comprehensive education system that has progressively improved the skill sets of the country's labour force. All these are indicative of Singapore's shift to the next stage of knowledge-based economic development.

According to Wan (2000), the TQM implementation level in the Singapore organisations was as high as that in the developed economy of the US and the newly industrialised economy of Taiwan, and higher than that in the developing economies of India, China, Mexico and the United Arab Emirates where the emphasis on TQM was more recent. In late 1997, the Singapore government set aside S\$40 million to assist Singapore's organizations in establishing quality cost systems (Quality Digest, 1997). The Singapore Productivity and Standards Board (PSB) has prepared a series of books and videotapes dedicated to the subject of quality cost or, as they like to refer to it, "The Cost of Non-conformance". In addition, PSB has developed a cadre of consultants that will help industry implement the quality cost concepts.

"Poor-Quality Cost pilot projects were started in 1998 to examine the quality cost in six industries – plastic products, printing, hotel, garments, electrical, and packaging, and will chalk up savings estimated at more than S\$12 billion a year" (The Straits Times, 1998).

3.8.5 Quality Experience Transfer

Are the lessons from East Asia transferable to other regions? Since the situation in each country and region is different, it is easy to understand that direct replication of the East Asian model is unlikely to succeed. East Asia as a region has offered a political, economic and social model and an enabling environment for the catching up of latecomer countries. Every country was under strong market pressure to constantly improve capabilities and climb the ladders of development. What drove them was a national desire for material well-being and the demonstration of excellence from neighbouring countries, not conditional ties or policy matrices introduced by international organizations. No other developing region has formed such an organic and dynamic interdependence as East Asia (Mossa, 2001).

A number of lessons can be learned from the East Asia experience: (Kang, 1995)

- governments provided facilities and policy environment – e.g. privatisation, physical infrastructure, institutional support, extension of easy credit and formulation of coherent policies – to allow entrepreneurs to thrive and excel;
- political leaders had an interest in reforming the civil service to carry out their policy initiatives;
- literature has shown that Government support and ownership of the quality process by the developing countries is essential for development. Without Government support and country ownership, policy reforms could not be sustained.

3.9 The Pros and Cons of Total Quality Management

TQMFailure Progress

“Those who say things can’t be done should stand out of the way of those who are busy doing them.” (Charles Handy, 1997)

3.9.1 TQM Failure

While Total Quality Management was one of the hottest business paradigms of the 1980s, in the early 1990s it had come under increasing criticism, as “another program” or a “management fad” because it is argued that it has failed to provide sustained competitive advantage. (Naj (1993); Fuchsberg (1992); Schaffer and Thomson (1992); Cole(1993); Collins (2001)). They argued that some companies, soon after the winning The Baldrige Award, went bankrupt.

Many business magazines and newspapers have also attacked TQM: The Economist (1992, 1995) “The Cracks in Quality” and the “Straining of Quality”; Paton, S. M. (1994), in Quality Digest, “Is TQM Dead”; Stratton, B. (1993) “Why You Can’t Link Quality Improvement to Financial Performance”, Quality Progress,

Hendricks et al. (2000), pointed out that much of the criticism is based on evidence from surveys conducted during the early 1990s. For example, in a survey of 500 companies by Arthur D. Little, only 36% indicated that TQM was having a significant impact on their ability to compete. A survey by A. T. Kearney of 100 British firms indicated that only 20% believed that their quality programmes had achieved tangible results. A study of thirty quality programmes by McKinsey & Co. found that two-thirds of them had stalled or fallen short of yielding improvements. Hendricks et al., (1997) stated that:

“Although these survey results have been used to make a case against TQM, it is worth noting that these results are nothing more than opinions, perceptions, and impressions about the value of TQM. They do not present any objective data on the financial benefits obtained by the responding organizations”.

They continue that the competition from other paradigms such as re-engineering, customer-focused organizations, process-oriented organizations, learning organizations, supply-chain management, six sigma etc., have created problems for the TQM movement.

Drucker (1989), argued that poor knowledge about quality and its management were the principal causes of company failures. Van Allen (1994), also indicated that inadequate leadership, rather than any inherent defects in the TQM model, is the source of the poor results achieved by TQM in many organizations. He advised that the organization's quality culture must exist if implementation problems are to be avoided.

3.9.2 TQM Progress

TQM advocates, e.g. Dale, (2003); Oakland, (2000); Bank, (2000); Garvin, (1988); Drummond, (1992), see quality as the most important competitive weapon for organisational survival. They also believe that there “is” hard evidence for TQM success in the Japanese economic miracle. Evidence that TQM “works” also comes from the US General Accounting Office (GAO, 1991) where a survey was carried out to study the impact of TQM on the performance of US companies who scored the

highest results against the Malcolm Baldrige quality award criteria in 1988, which revealed that those companies have “Achieved better employee relations, higher productivity, greater customer satisfaction, increased market share, and improved profitability.”

Two large sample studies conducted by Hendricks and Singhal compared the performance of firms who have received quality awards with a matched control group of firms who have not. In the first study, Hendricks and Singhal (1997), showed that firms receiving quality awards outperformed the control group in operating income and revenues over a ten year period.

In a second study Hendricks and Singhal (2000), showed that the long run stock performance of firms who receive quality awards was far higher (38% to 46%) than a matched control group of companies who did not receive such an award.

TQM use in both the public and the private sectors was surveyed by the British Institute of Management, UK, (Lackritz, 1997; Wilkinson et al., 1995) – “TQM Within Fortune 500 Corporations”; The International City/County Management Association, USA, ICMA, (West et al., 1994); Canada Association of Municipal Administrators, (CAMA, 1996). The results of these studies are shown in Table 3-9.

Table 3-9: The Use of TQM in USA, UK and Canada

Survey	Survey source and date	Total Survey	Response Rate	Use of TQM or Quality Techniques
British Institute of Management	Wilkinson et al. 1995	4,000	880 (22%)	71%
Fortune 500	Lackritz 1997	500	95 (19%)	92%
ICMA (U.S.)	West, et, al. 1994	1,211	433 (36%)	55%
CAMA, Canada	CAMA, TQM Survey1996	186	119 (64%)	80%

These data confirm there is considerable interest in quality initiatives and TQM in both the public and the private sectors. Also, it is of interest to note that all of these surveys conclude that the use of quality initiatives or TQM within responding private and public sector organisations were generally deemed “successful” in creating quality culture, reducing waste, improving quality, reducing cost, increasing profit and raising customer loyalty.

In a study of companies that won the Australia Quality Award, Abraham et al. (1999) found the key factor in achieving a successful change to a quality culture was that of management support.

3.9.3 Why TQM Fails

The failures and disappointments of quality initiatives can be avoided. The key to lasting success lies at the start of the journey to continuous improvement, with the effectiveness of the original assessment and the comprehensiveness of the plan to manage the change forming the basis for a successful journey.

Deming (1982) pointed out that organisations cannot develop quality management overnight. A manager who believes this is searching for something that will never happen. Organisations need to understand that the achievement of quality is an ongoing process. According to Young and Wilkinson (2002), many surveys show that most of the organisations never implement total quality practices in full. Instead they prefer “piecemeal” quality management activities which they are calling Total Quality Management.

The success of TQM depends largely on management’s ability to lead the organization’s quality transformation. In addressing why transformation efforts fail, Kotter (1995) identified eight common management errors: 1) not establishing a sense of urgency; 2) not creating a powerful enough guiding coalition; 3) lacking a vision; 4) not communicating the vision; 5) not empowering others to act on the vision; 6) not planning for short-term wins; 7) not consolidating improvements and producing more change; and, 8) not institutionalizing new approaches.

Oakland (2000; 1993) mentioned eleven principle reasons for the disappointment with TQM experienced by many companies. These are summarised as follows:

- Lack of management commitment;
- Lack of vision and planning;
- Satisfaction with the quick fix;
- The process becomes tool-bound;
- Easy acceptance of packaged methodologies;
- Quality become constraining;
- Culture changes versus project approach;
- Creation of a quality empire;
- Management did not change;
- The people were not involved;
- Lack of real business measurement.

The evidence presented in the studies in sections 3.9.2 provides a more factual, objective, and statistically valid assessment of the impact of TQM on financial performance. The message from the analysis of the above surveys and studies is clear:

- When TQM is implemented effectively, financial performance improves dramatically.
- The proclamation that TQM is dead is premature.

3.10 Summary

This chapter began with an historical review of definitions provided by experts and researchers worldwide in literature available in the public domain for the concept of quality and that of total quality management TQM as it was introduced by quality experts Deming, Juran, Crosby, Feigenbaum, Ishikawa, Taguchi and others, section 3.5.4.

In order to arrive at an understanding of theory on TQM, attention was paid to three internationally accepted self-assessment models developed to audit institutions

worldwide: The Deming Prize in Japan, the European Model for Total Quality Management in Europe, and the Malcolm Baldrige National Quality Award in the United States of America, sections 3.5.5. This was followed by a discussion of the ISO 9000:2000, which aims to integrate and harmonize similar existing quality management standards into a single body of international quality standards that could be applied to world trade and commerce.

Finally, a review of TQM implementation, its progress and failure in developed and developing countries and especially in Arab countries, was presented to see how far they are in their quality movement and what lessons can be learned and transferred.

Based on the literature review, the TQM framework and its key principles should not be blamed for any? failure; it is more a lack of understanding of what TQM means for each unique organization and how to implement it effectively. TQM can be a powerful vehicle by which companies can achieve excellence in business performance.

The next chapter, chapter (4) introduces the critical success factors which will form the basis for the research generic framework to examine quality initiatives in the Libyan context.

Based on a comprehensive review of the literature of TQM in both academic and practitioner sources in Chapter 3, this chapter aims to build up the theoretical framework for the empirical study by pointing out the most critical success factors in TQM implementation in the Libyan context. These factors form the basis for building the research instrument (the questionnaire) to measure the implementation of quality management initiatives in Libyan process and manufacturing companies.

Chapter 4

4 Framework for TQM Implementation

4.1 Introduction

The only way for organisations in developing economies to attract consumers and gain competitive advantage in the market is to offer high quality products at a relatively low cost, Porter (1999). TQM is believed to contribute to a management style that satisfies customers' needs. So what quality activities most directly affect business performance, and what factors are critical for the success of TQM?

This chapter builds on the previous chapter to distil the philosophies of leading writers on quality, the criteria applied to the various quality awards, academic and practitioner research findings, and those factors identified by Libyan managers in the field of manufacturing during the preliminary investigation. This has enabled the researcher to identify the most critical success factors for implementing TQM in the Libyan process

and manufacturing sector, and to use these factors as a theoretical framework to investigate the quality initiatives in the Libyan context.

In this chapter, Section 4.2 will elucidate what the critical success factors are, why they are important for any organisation or project, and which critical success factors have been developed and validated to investigate TQM implementation globally. Section 4.3 will expand on previous studies regarding TQM implementation in the Arab countries, and the critical success factors affecting TQM implementation in the Arab environment. Section 4.4 will clarify how the author decided on the critical success factors which should be used to measure the implementation of quality initiatives in the Libyan context. Section 4.5 will summarise Chapter 4 and introduce Chapter 5.

4.2 Critical Success Factors

Critical success factors (CSFs) are those activities that a company must do well in order to ensure the success of its business operation and cope with the competitive forces within its field (Laudon and Laudon, 1998). Once the organization has identified these competitive forces, it should identify the factors that are critical to its business success. Therefore, critical success factors represent those managerial or enterprise areas that must be given special and continuous attention to bring about high performance (Boynton and Zmud, 1984; Huotari and Wilson, 2001; Johnson and Scholes, 2002).

Rockart (1979) defines critical success factors as follows:

“Critical success factors thus are, for any business, the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organisation, they are the critical key area where ‘things must go right’ for the business to flourish. If results in these areas are not adequate, the organisation’s efforts for the period will be less than defined.”

According to Rockart’s definition, the organization should determine those things which must go right in order to succeed in its achieving goals and objectives. If results in these

areas are not satisfactory, the organization's efforts and resources will not have been well spent. Attention must be paid to them by managers in order to:

- Obtain a better understanding of quality management practices;
- Determine the current quality position of an organization;
- Assign responsibilities within an organization;
- Monitor quality and improvement programmes;

Ketelholm (1998) stated that due to competition, *“Key success factors are the minimum capabilities that organisations must master to enter the world of competition.”*

Each organization has a set of critical success factors and should pay attention to these and use them as benchmarks for competitive performance (Johnson and Scholes, 2002). CSFs are important for an organization because they:

- Support the planning process
- Assist in prioritizing TQM implementations
- Help in creating process criteria
- Communicate the objectives
- Guide managers in understanding where best to focus
- Promote structured analysis processes

4.2.1 Critical success factors in international organisations

In Chapter 3 an extensive review of the literature was carried out to explore the concepts of TQM from leading writers on quality (Crosby, 1979; Deming, 1986; Feigenbaum, 1991; Ishikawa K., 1985; Juran et al., 1993; Oakland, 2003; Taguchi, 1982), and others who have developed propositions in the area of quality management. Their insights into quality management provide a good understanding of quality management principles and have helped quality professionals and practitioners to build on their ideas to develop their TQM implementation models. Several studies dealing with empirically validated scales for integrated quality management were carried out by practitioners (Black and Porter, 1996; Flynn et al., 1994; Powell, 1995; Saraph et al., 1989; Sila, 2002). These instruments are different in terms of constructs (see Table 4-1).

Saraph et al. (1989), developed the initial construct based on a review of the work of Juran (1974), Deming (1986), Garvin (1988), Crosby (1979) and Ishikawa (1985). They surveyed 162 quality managers and general managers in 20 manufacturing and service companies and identified a set of 120 quality management perceptions, from which they designed a set of reliable measurement attributes and scales. They pioneered the development of valid and reliable instruments to measure quality management practices. These perceptions were grouped into eight principal factors of quality management practices, as shown in Table 4-1.

Motwani (2001) emphasised that the study conducted by Saraph et al. (1989) was one of the first empirical efforts to develop and validate an instrument for integrated quality management. According to Ahire et al. (1996), the Saraph et al. (1989) study excluded two important factors; customer focus and use of statistical process control (SPC), but it still has a high level of external validity, since both manufacturing and service industries were included in the survey sample.

Most of the studies shown in Table 4-1, are comprehensive and have a higher level of validity than the non-empirical TQM studies (Motwani, 2001). In many respects, these instruments complement one another.

Black and Porter (1996), conducted a survey to determine the TQM critical success factors as perceived by UK quality assurance professionals, using as a sample members of the European Foundation for Quality Management. The survey questions were developed from the Baldrige Award criteria, recognizing that it is the best established and recognized TQM? framework (NIST, 2003: Section 3.6.5). Ten factors were found to be the most critical in implementing TQM in any organization, and are shown in Table 4-1. Black and Porter suggested that a similar study should be conducted in the USA to determine whether the TQM critical success factors were the same for US quality assurance professionals.

Flynn et al. (1994), categorized the critical success factors into seven core dimensions, which are also included in Table 4-1. The study focused on a plant rather than an

organization as a unit of analysis, and utilized the perceptions of both line and managerial level staff. This has since been applied to US manufacturing firms to assess the impact of quality management practices on quality performance and competitive advantage. Ahire et al. (1996), conducted an extensive review of the prescriptive, conceptual, practitioner, and empirical literature on quality management and the Malcolm Baldrige Award criteria. From this they developed, validated, and tested 12 constructs, Table 4-1 to measure integrated quality management through an empirical survey of 371 manufacturing firms in the motor vehicle parts and accessories industry at the plant level. The 12 TQM constructs according to their study are listed in Table 4-1. Powell (1995) also identified 12 factors which are related to the critical success factors, based on the EFQM model, Table 4-1.

Many researchers have also investigated the critical success factors of implementing TQM (Allen and Kilmann, 2001; Dean and Bowen, 1994; Douglas and Judge, 2001; Easton and Jarrell, 1999; Nilsson et al., 2001; Reed, 2000; Waldman 1994; Sila, 2002). These writers produced more or less the same factors as the previous studies. The common conclusion from these studies is that each organization has a set of critical success factors to which it must pay attention, and that the implementation process is firm-specific (Ghobadian and Galleary, 2001).

Table 4-1: Comparison of TQM Critical Success Factors

Source	Critical Success Factors
Saraph et al. (1989)	Role of divisional top management and quality policy, Role of quality department, Training, Product service design, Supplier quality management, Process management and operating procedures, Quality data and reporting, Employee relations
Flynn et al. (1994)	Quality leadership, Quality improvement rewards, Process control, Feedback, Cleanliness and organization, New product quality, Inter-functional design process, Selection for teamwork potential, Teamwork, Supplier relationship, Customer involvement
Ahire et al. (1996)	Top management commitment, Customer focus, Supplier quality management, Design quality management, Benchmarking, SPC usage, Internal quality information usage, Employee empowerment, Employee involvement, Employee training, Product quality, Supplier performance
Black and Porter (1996)	Strategic quality, Management and corporate quality culture, Quality improvement, Measurement system and communication of improvement information, Operational quality planning, External interface management, Supplier partnership, People and customer management, Customer satisfaction orientation
Powell (1995)	Executive commitment, Training, Flexible manufacturing, Closer supplier relationships, Process improvement, Measurement, Adoption and Communication of TQM, Open organization, Zero defects mentality, Closer customer relationships , Benchmarking, Employee empowerment
Youssef (2006)	Top management commitment, Customer focus, Process management, Training and development, Employee involvement, Data quality, Supplier management, Continuous improvement.

4.2.2 Quality Awards Criteria as a basis for TQM

Quality award models encompass a comprehensive set of quality management principles and practices. They offer a paradigm for implementing quality strategies,

benchmarking best practices and performing self-assessments, or competing with other organizations in terms of organizational excellence.

Many empirical studies have used award criteria as a basis for establishing TQM constructs (Black and Porter, 1996; Dean and Bowen, 1994; Grandzol and Gershon, 1997; Wisner and Eakins, 1994).

4.2.3 TQM Measurement Approaches Reliability and Validity

Regardless of which TQM model is adopted, the constructs must be operationalized for empirical work. This involves selecting a list of items to measure each factor, providing a measurement scale for those items, and then testing the instrument for reliability and validity. For each construct, the actual level of TQM practice is represented by the average of the item ratings for that construct (Hackman and Wageman, 1995).

4.3 TQM Critical Success Factors in Arab Countries

In the last few years many studies have been carried out by Arab researchers to study TQM implementation in some Arabic countries, (see section: 3.8.2). These studies have measured the critical success factors for TQM implementation among Arab organisations.

Baidoun (2003), conducted an empirical study of critical factors for TQM in Palestinian organizations. The main focus of the study was to identify the critical quality factors for effective TQM implementation and to understand how they were implemented by Palestinian organizations.

The study revealed that nineteen quality factors were perceived as being critical for the successful implementation of TQM. These factors were identified and stratified into three tiers of criticality. Nine of them were addressed in the early stages of the implementation process. These nine most critical factors are:

1. Senior executives assume active responsibility for the evaluation and improvement of the management system, and for leading the quality drive.
2. Elements of quality management structure should be in place to manage the organization's quality journey.
3. Visibility of senior executive commitment to quality and customer satisfaction.
4. A formally documented quality management system should be in place.
5. Problem solving and continuous improvement processes, based on facts and systematic analysis.
6. Clear, consistent communication of mission statement and objectives defining quality values, expectations and focus.
7. Comprehensive policy development and effective deployment of goals.
8. Comprehensive identification of customers and customer needs, and alignment of processes to satisfy these needs.
9. The entire workforce understands, and is committed to the vision, values, and quality goals of the organization.

Al-Nofal (2004), conducted an empirical study of CSFs of TQM implementation in Kuwait. The study revealed that nineteen quality factors were perceived as being both critical and absolutely essential for the successful implementation of TQM. These factors were identified and stratified into three tiers of criticality, where nine of them were found to be critical:

1. Top management commitment;
2. Visible involvement of top management in quality,
3. Customer satisfaction;
4. Clear mission statement;
5. Quality planning;
6. Decision making at lower levels;
7. Effective communication between employees and management;
8. Organising for quality;

9. Employee commitment and enthusiasm.

Al-Omair (2002), conducted research to find out how TQM is understood, received, and deployed in Saudi Arabia. The organizations which participated in his study identified twenty one factors as being critical for TQM implementation. These were classified into three tiers of criticality, with seven factors identified as critical:

1. Senior executives' responsibility;
2. Executives' vision and customer satisfaction;
3. Customer needs will define and feedback to processes;
4. Clear mission statement, objectives, values, expectations, policy deployment;
5. Workforce commitment, training;
6. Continuous improvement;
7. Fact-based processes.

Najeh and Kara-Zaitri (2004), conducted an empirical study of CSFs of TQM implementation in Libya. The results indicated eighteen quality factors stratified into three tiers of criticality. Seven factors were considered as being the most critical quality factors:

1. Top management commitment;
2. Visible involvement of top management in quality and customer satisfaction;
3. Clear mission statement;
4. Quality planning;
5. Staff development;
6. Satisfying customer needs and expectations;
7. Multi-skill training on the job.

Badri et al. (1995), conducted a thorough study of 120 hypothesized components of quality management practices (QMPs). They used factor analysis on the 424 responses to a survey of United Arab Emirates firms to show that QMPs could be reduced to eight factors, similar to those presented by Saraph et al. (1989).

4.4 Critical Success Factors for Implementing TQM in Libyan Process and Manufacturing Companies

As can be seen from the factors identified above, there is substantial agreement among TQM professionals, researchers and experts on the various TQM factors, and most of the instruments discussed above (Table 4-1) are comprehensive and possess higher validity than the non-empirical TQM studies (Section 3.6.4). In many respects, these instruments complement one another and the researcher felt that a blending of these instruments and other measuring criteria, such as quality awards, ISO 9000 and the opinions of the Libyan industrial experts, was the best approach to take for the identification of critical factors for TQM which are suitable for the Libyan manufacturing sector.

Based on an extensive study of previous researches on TQM, and by combining quality professionals' philosophies, empirical surveys, case studies, quality awards, ISO 9000, and seeking industrial experts' opinions in the Libyan industry (Najeh and Kara-Zaitri, 2004; Sayeh et al., 2005; Shembesh and Tulti, 2005; Youssef, 2006), eight factors have been identified as being critical for successful TQM in Libyan process and manufacturing companies, namely:

- (1) Top management commitment;
- (2) Customer focus;
- (3) Process management;
- (4) Employee training and development;
- (5) Employee involvement;
- (6) Data and measurements;
- (7) Supplier management; and,
- (8) Continuous improvement.

For each of the eight factors, a number of items related to Libyan industrial culture (a total of 52) were carefully formulated to measure the level of implementation for each factor in the Libyan industrial context. Table 4-2 shows the critical success factors and elements to measure them.

Table 4-2: TQM Critical Success Factors (Libyan Contexts)

Factor and Elements	Factor and Elements
Factor 1: Top management commitment <ul style="list-style-type: none"> • Top management involve people in planning stage • Top management deploy plans and policies • Employees know the organization's mission • Employees participate in setting objectives • Top management review polices • Top management use performance indicators • Top management encourage improvement • Top management provide resources 	Factor 2: Customer focus <ul style="list-style-type: none"> • Customer feedback always considered • Always determine customer requirements and expectations • Using customer feedback to improve processes • Encouraging employees to satisfy customers • Ensuring that customer complaints are dealt with
Factor 3: Process management <ul style="list-style-type: none"> • Provide key process measurement • Use of clear procedures and instructions • Use techniques for processes analysis for improvement • Clear efforts to reduce waste • Forming teams, analysing processes for improvement • Calibration of measuring devices to ensure accuracy • Keeping site neat and clean at all times • Use research findings for improvement 	Factor 4: Training and development <ul style="list-style-type: none"> • Training needs analysis • Managers are involved in identifying training needs • Resource availability to cover training needs • Use of modern training methods, distance learning, e-learning • Use organization's resources for on the job training • Conducting training evaluation • Use training recorders in further training and development
Factor 5: Employee involvement <ul style="list-style-type: none"> • Encouraging the employees to suggest ideas for improvement • Implementing suggestion systems • Encouraging employees to report problems • Use cross sectional teams to solve problems • Open system communication to solve problems • Provide safe and clean working environment • Employee empowerment • Conducting employee surveys • Implementing a good motivation systems 	Factor 6: Data quality and measurement <ul style="list-style-type: none"> • Utilising information in decision making • Use of performance indicators (PIs) to measure every process • PIs are compared with international standards • Use of PIs results in process improvement • Data is reliable, precise, comprehensive and clear
Factor 7: Supplier management <ul style="list-style-type: none"> • Suppliers selections based on quality and capability • Establishing a long-term relationship with suppliers • Ensuring quality of supplies before delivery • Encouraging auditing of suppliers • Sharing information with suppliers 	Factor 8: Continuous improvement <ul style="list-style-type: none"> • Key processes are regularly reviewed for improvement • Using problem solving methods: quality improvement teams, quality circles, self-assessment, internal auditing. • Using benchmarking to identify need for change • Promoting innovation • Building quality culture around all organization's departments

All the elements listed in Table 4-2 were included in the survey instruments (questionnaire and semi-structure interviews) (Section 5.9) as criteria to measure the implementation of critical success factors in daily practice within the Libyan process and manufacturing sector. The eight factors are explained below:

4.4.1 Factor one: Top Management Commitment

“Where there is no vision, the people perish”
(Proverbs 29:18, King James Version).

Most quality professionals and practitioners agree that leadership is the single most important factor influencing the successful application of quality management principles (Kanji and Yui, 1997; Kaplan and Norton, 2001; Smith, 2003). Leadership (top management commitment) appears as the most important criterion in most, if not all of the TQM awards (e.g. MBNQA, 2004; EFQM, 2003; Dubai Quality Award 2004; AQA, 1994).

Total quality is a reflection of the culture, attitudes and systems of an organization, which aims to provide, and continue to provide, its customers with products and services that satisfy or exceed their needs. The quality culture requires quality in all aspects of the organization's operations, with things being done properly the first time, and defects and waste eliminated from operations.

The organization's business is conducted by its employees, managers and officers, under the direction of senior management and led by the CEO. In carrying out the company's business, the CEO and senior management are accountable to the board, and ultimately to shareholders (Hansson et al., 2003).

TQM is a way of life for any organization that has to be introduced and led by top management. This is a key point. Attempts to implement TQM often fail because top management does not lead and is not committed. Commitment and personal involvement is required from top management in creating and deploying clear quality values and goals consistent with the objectives of the organization, and in creating and deploying well-defined systems, methods and performance measures for achieving

those goals. These systems and methods guide all quality activities and encourage participation by all employees. The development and use of performance indicators is linked, directly or indirectly, to customer requirements and satisfaction, and to management and employee remuneration.

It is not easy to introduce TQM to a traditionally managed organization. An open, cooperative culture has to be created by management. Employees have to be made to feel that they are responsible for process improvement and customer satisfaction (Collins, 2001; Drucker, 2002; Jones, 2004; Martin and Cheung, 2002). They are not going to feel this if they are excluded from the development of visions, strategies, and plans. It is important they participate in these activities to ensure their commitment during the implementation (Dale and Duncalf, 1984; Ebrahimpour and Withers, 1992; Oakland, 2003).

Top management must work to change the organization's quality culture. This change requires an emphasis on fulfilling the potential of the organization and continually improving the processes, aims, mission, values and principles that will guide it. These are the elements to be considered in building a bridge to the future. Many of the old ways of doing business must be eliminated in order to achieve an effective changeover. It takes time, it takes courage, it needs commitment, and it needs profound knowledge, as Deming (1997) notes.

Oakland (2000) and Deming (1986) identified five requirements for effective leadership:

1. Clear beliefs and objectives in the form of a mission statement;
2. Clear and effective strategies and supporting plans;
3. The critical success factors and the critical process;
4. The appropriate management structure;
5. Employee participation through empowerment and continuous improvement practices (evaluate, plan, do, check, act).

Description of how this factor (Top management commitment) implemented in the Libyan process and manufacturing companies can be seen in section (7.2.3)

4.4.2 Factor 2: Customer Focus

In today's increasingly competitive global markets, building customer loyalty and retaining profitable customers is a critical component in any company's success.

According to a number of authors (e.g. Oakland, 2000), an organization must look to its customers in determining what it needs to do and in evaluating its success in doing it. Organizations must be knowledgeable in customer requirements and responsive to their needs. They need to maintain high levels of service and measure customer satisfaction through a variety of indicators, such as commitment to customers, determining customers' requirements and expectations, customer service standards and determining customer satisfaction (Deming, 1982; Garvin, 1987).

TQM is a customer-oriented management approach and customer satisfaction is seen as the organization's highest priority. The organization believes it will only be successful if customers are satisfied. The TQM company is sensitive to customer requirements and responds rapidly to them. Measuring customer satisfaction is a sound business strategy because customer satisfaction brings many benefits. The advantages of measuring customer satisfaction involve the following issues:

1. Learning strategies for improving service;
2. Understanding customer expectations;
3. Identifying common reasons for customer dissatisfaction;
4. Improving customer retention;
5. Making customers feel valued;
6. Uncovering missed opportunities to demonstrate your capacity to solve problems and win back customers' confidence;
7. Improved competitive position.

It is important to emphasize that total customer satisfaction can only be attained if all employees are devoted to external customer satisfaction and can work together to assist each other to achieve this common objective. In this case, each person must improve what is around them and look for ways to satisfy the requirements of others in the organization efficiently (Zineldin, 2000). This requires a climate that encourages and

supports teamwork, in addition to the promotion of a general ethic of continuous improvement. Total customer service means meeting the needs and expectations of both internal and external customers.

Description of how this factor (**Customer Focus**) implemented in the Libyan process and manufacturing companies can be seen in section (7.2.4)

4.4.3 Factor 3: Process Management

Process management emphasizes adding value to processes, increasing quality levels, and raising productivity per employee. Process management also involves analyzing and redesigning processes to remove problems and inefficiencies in the organization (Dahlgaard et al., 2002; Deming, 1986). According to them, the greatest advantage of process management is that it helps an organization to understand how things are really done, revealing problems and bottlenecks. Process management also helps to:

- Reduce lead times;
- Decrease costs;
- Improve internal efficiency;
- Improve overall quality;
- Increase customer and employee satisfaction.

Process improvement entails incremental changes, improving one or two processes at a time, and is undertaken at an operational level by those who are closely involved in the process. Process measurement is key to the success of any process improvement and can increase understanding of how processes are operating. How much equipment downtime occurred on the second shift? How many delays were encountered in entering or filling customer orders, and why are operations failing to produce expected results (Deming, 1994; Hardie, 1998; Harrington, 1995; Hellström and Peterson, 2005; Lee and Dale, 1998; Zairi, 2002)?

The ISO 9001:2000 standard defines a process as a system of activity that uses resources to transform input elements into output elements. It is an essential

requirement for ISO 9001:2000 that the organization should plan and develop the processes needed for product realization. Planning of product realization should be consistent with the requirements of the other processes of the quality management system (ISO 9000:2000 requirement 4.1).

In planning product realization, the organization should determine the following, as appropriate:

- a) Quality objectives and requirements for the product;
- b) The need to establish processes, documents, and provide resources specific to the product;
- c) Required verification, validation, monitoring, inspection and test activities specific to the product and the criteria for product acceptance;
- d) Records needed to provide evidence that the realization processes and resulting product meet requirements (ISO 9000:2000 requirement 4.2.4).

ISO 9001:2000 also emphasizes process documentation as an important part of business process management. Documenting all the processes in the organization aids communication throughout the organization. The greatest challenge for the organization is to keep the quality documentation up-to-date and accessible to those involved with its use.

Description of how this factor (**Process Management**) implemented in the Libyan process and manufacturing companies can be seen in section (7.2.5)

4.4.4 Factor 4: Employee Training

Training is defined as the planned systematic development of the knowledge, understanding, skills, attitudes and behaviour patterns required by an individual in order to perform adequately a given task or job. The training and development of company employees is essential for organizational operation and advancement. Education and training can improve employees' knowledge and skills, and can have an important

influence on their development and lead to an increased sense of belonging (Oakland, 2003).

Several recent empirical studies have revealed that training and education are critical to successful TQM implementation (Ahire et al., 1996; Black and Porter, 1996; Deming, 1982; Flynn et al., 1994; Hardie, 1998; Powell, 1995; Saraph et al., 1989); (Thiagarajan and Zairi, 1998; Calisir et al., 2001). Ferketish and Hayden (1992), Zhang (2000a), and Yusof and Aspinwall (2000), advise organizations to examine performance problems first and then provide the proper training to eliminate them. They recommend that management should initially focus on behaviours, such as identifying and solving problems and team working to support improvement. The organization should complete a “needs assessment” first, from which companies could determine what is right and what is wrong, and then gear the training programme to address the problem areas so that workers can do their jobs more efficiently and effectively. Examples of training courses for TQM implementation include leadership skills, communications, teamwork, problem solving, interpreting and using data, meeting customer requirements, process analysis, process simplification, waste reduction, cycle time reduction, error proofing, priority setting based upon cost and benefit data, and other training that affects employee effectiveness, efficiency, and safety.

Ferketish and Hayden (1992), stress the importance of education and training for continual updating and improvement, emphasising that employees inherently want to learn and develop. Ahire et al. (1996), believe that an employee empowerment and involvement framework is not effective unless employees have received formal, systematic training in quality management.

Ahire et al. (1996), indicate that Xerox’s quality training was successful because it began at the top of the organization and progressed downwards, giving employees at all levels visible role models. Top management should be convinced that the present level of performance is not good enough and that something could be done about it. Chief executives and the most senior directors and managers must all demonstrate that they are serious about quality. Middle management also has an important role to play. They

not only need to grasp the principles of TQM, but must go on to explain them to the people for whom they are responsible and ensure that their own commitment is communicated.

Description of how this factor (**Employee Training**) implemented in the Libyan process and manufacturing companies can be seen in section (7.2.6.)

4.4.5 Factor 5: Employee involvement and participation

“It has become obvious over the past few years that people will in fact work more creatively and more productively if they are trusted and empowered, and if they know that what they are doing means something.”

Jack F. Welch, Jr., Chairman and CEO, General Electric Company (1991)

In today's business environment, employee involvement is part of the quality culture in many successful organizations around the world. A successful TQM environment requires a committed and well-trained workforce that participates fully in quality improvement activities (Caudron, 1991). Such participation is reinforced by reward and recognition systems which emphasize the achievement of quality objectives and customer satisfaction. Dale (1994a) argues that employees should be encouraged to take more responsibility, communicate more effectively, and act more creatively in responding to processes and customer requirements.

According to Lawler et al. (1995) and Pun (2002), employee involvement can be characterized by the use of the following practices:

- **Sharing power:** Various practices which give employees a degree of control or allow them to have input into decisions that affect their work, such as participative decision-making and job enrichment;
- **Rewards:** This refers to the use of performance-contingent reward systems that link compensation, promotions, and recognition to individuals, groups, and organizational performance;

- **Knowledge:** Employees should be provided with knowledge and skills at all levels through their career to enable them to keep updated with their field of specialization;
- **Sharing information:** This refers to the practice of informing employees about company and work group goals, as well as the sharing of performance feedback.

It is not easy to embed TQM into the traditional organization. An open cooperative culture has to be created by management. Participation requires that leaders trust employees, have faith in employees' ability, and believe that employees want to do a good job. Without trust and support there is no real teamwork, no atmosphere for innovation, and no opportunity for real growth.

Description of how this factor (**Employee involvement and participation**) implemented in the Libyan process and manufacturing companies can be seen in section (7.2.7)

4.4.6 Factor 6: Quality of Data and Measurement

Quality of data and measurement, or fact based management, provides an integrated approach to measuring and analyzing performance in a wide range of key business indicators: customer, product and service, financial, human resource, and operational. This management system can help align resources, improve communications, productivity and effectiveness, and achieve strategic goals.

Establishing performance measures directly linked to internal and external requirements improves alignment with business objectives throughout the company and provides a means for continual accountability to those objectives.

Continuous quality improvement relies on a steady flow of accurate information from various sources, such as workers, agents, vendors and customers, about processes that generate a company's products (Crosby, 1979; Deming, 1986; Ishikawa, 1985).

Analysis of this information allows management to make effective decisions in managing quality.

The statistical approach to process management in both engineering and manufacturing recognizes that most problems are system-related, and are not caused by particular employees. In practice, data are collected and put in the hands of the people who are in the best position to analyze them and then the appropriate action is taken to reduce costs and prevent non-conformance. Usually these people are not managers but workers in the process. If the right information is not available, then the analysis, whether it be of shop floor data, or engineering test results, cannot take place, errors cannot be identified, and so cannot be corrected.

Description of how this factor (**Quality of Data and Measurement**) implemented in the Libyan process and manufacturing companies can be seen in section (7.2.8)

4.4.7 Factor 7: Supplier Quality Management

In today's businesses, suppliers' quality outputs and delivery have a significant and direct impact on cost, quality, customer satisfaction and loyalty, and affect the competitiveness and profitability of a company (Crosby, 1979; Deming, 1986; Ishikawa., 1985). Management of suppliers is a vital task for manufacturers as it can shape their product quality and time-to-market of new products (Handfield, 2000; Lemke et al., 2000; Thakur, 2002). Supplier quality management (SQM) is the process of measuring, analyzing and managing supplier performance for the purposes of mitigating risks, reducing costs and driving continuous improvement (Goffin et al., 1997). Unit price criteria were used as the traditional approach to purchasing, followed by quality and speed of delivery. Today a better way to select suppliers is by looking not only at current quality, but also at their quality record, and their potential for further improvement (Bevan, 1987; David, 2002; Deming, 1986; Lamming, 1993). From the experience of Japanese companies, it was demonstrated that supplier involvement is essential for improving quality and increasing company productivity. Larson (1994)

states that “supplier involvement is critical for TQM implementation. It is believed that 50 percent of a company’s non-conformances are caused by defective purchased materials.”

Description of how this factor (**Supplier Quality Management**) implemented in the Libyan process and manufacturing companies can be seen in section (7.2.9)

4.4.8 Factor 8: Continuous Improvement

Continuous improvement (CI) simply means making things better, and is derived from the Japanese term *kaizen*, meaning to maintain and improve working standards through small, gradual improvements. Kaizen means ongoing improvement involving everyone, including managers and workers (Imai et al., 2005; Lindsay and Petrick, 1998). According to Graham (1995), an organization using a continuous improvement approach seeks to learn what causes things to happen and then uses this knowledge to:

- Reduce variation;
- Remove activities that have no value to the organization;
- Improve customer satisfaction.

Continuous improvement refers to all efforts that are directed at increased effectiveness and efficiency in meeting accepted customer expectations. Continuous improvement is not only associated with solving problems, it is a continuous process to achieve a better understanding of the market, to innovate products and processes, to manage and distribute material and products, and to provide service to customers (Mears and Voehl, 1995; Pearce and Robinson, 2000; Rao et al., 1996).

The success of quality improvement is based on every member of the organization’s understanding concerning the needs of their customers (internal and external).

The Deming cycle, or the -PDCA-cycle, figure 4-1, serves as a symbol for continuous improvement, and consists of the four phases: plan, do, check and act (Deming, 1994).

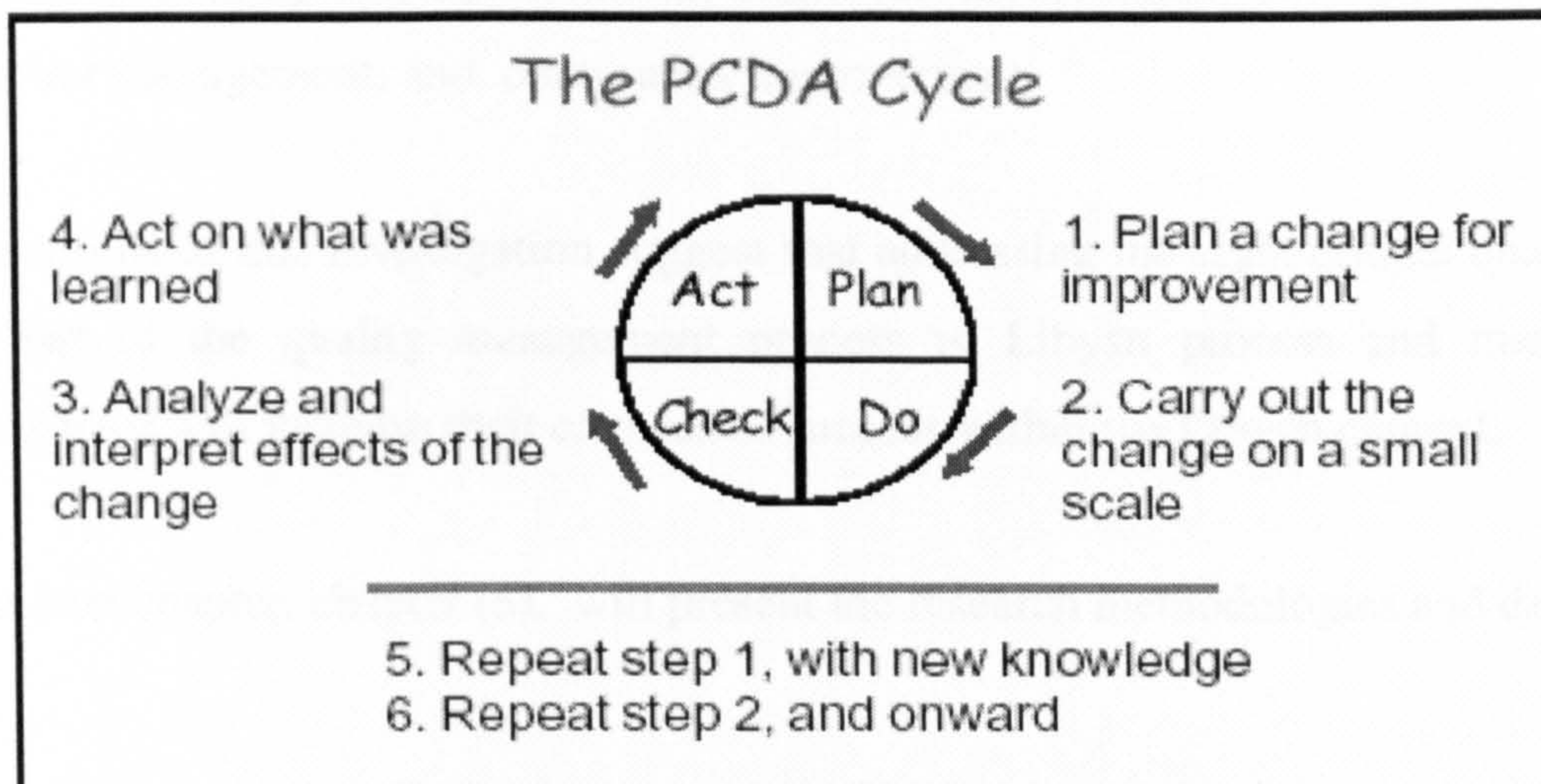


Figure 4-1: Deming cycle (PDCA-Cycle)

Description of how this factor (**Continuous Improvement**) implemented in the Libyan process and manufacturing companies can be seen in section (7.2.10)

4.5 Summary

This chapter builds on the previous chapter and goes further? to study the empirical literature of TQM and use quality practitioners’ experience in developing the most important factors (Critical Success Factors) that a company must do well in order to ensure the success of its TQM journey. From the literature it was clear that each organization has a set of critical success factors and should pay attention to them, using them as benchmarks for competitive performance.

After a comparison of the international empirical studies, which have examined the relationship between the total quality management (TQM) and organisational performance, and the empirical studies from Libya and other Arab countries as well as the TQM Frameworks Based on Quality Awards (Baldrige, Deming, EFQM model), eight factors have been identified as being critical for successful TQM in Libyan process and manufacturing companies.

These are: top management commitment; customer focus; process management; employee training and development; employee involvement; data and measurements; supplier management; and, continuous improvement.

The results of this investigation suggest that addressing the eight critical quality factors as part of the quality management process in Libyan process and manufacturing companies will increase their chances of success within the Libyan context.

The next chapter, chapter (5), will present the research methodologies and design.

The purpose of this chapter is to present the research methodology, and to describe the research process used in the study, including the selection of the study population and participants, the data collection methods and procedures. A description of the study instruments and data analysis procedures to assist in generating valid and reliable research results is presented.

Chapter 5

5 Research Methodology

5.1 Introduction

The initiative for this research arose as a result of the researcher's personal experience, gained in working with the Libyan oil industry, of difficulties in implementing quality management in Libyan process and manufacturing companies. The primary goal has been firstly, to promote an understanding of total quality management (TQM) and the impact it can make on management philosophy and behaviours in Libyan process and manufacturing companies and secondly, to develop a model (roadmap) to help companies to develop successful strategies for implementing and maintaining TQM, including practical guidance on what to do and what to avoid.

The methodology developed in this study is largely driven by the research objectives stated in Section 1.5 of the thesis, and answers the following research questions:

- Question 1: *What is the overall business performance within TQM? How is TQM implemented in other parts of the world and why has it progressed in some countries and organizations and failed in others?*
- Question 2: *What are the critical success factors for implementing TQM?*
- Question 3: *What is the current status of implementation of quality initiatives in Libyan process and manufacturing companies and what are the difficulties and barriers facing them?*
- Question 4: *What kind of TQM implementation model should be developed in order to guide Libyan companies in implementing TQM?*

The researcher used several different methods in order to address the research questions above:

A question 1 was answered on the basis of an extensive literature review. This review on all aspects of TQM helped to provide a detailed understanding of the state of TQM in different parts of the world, and how it can help in improving productivity and competitiveness with concentration on developing countries' (Dubai, Malaysia, Singapore, Pakistan, and Eastern Europe) experience in implementing quality initiatives and identifying those that proved to be successful.

Question 2 was answered by comparing empirical studies that have been validated, and used as measurement instruments for TQM implementation.

The most appropriate strategy to answer research question 3 was a questionnaire survey. Questionnaire surveys have been used by many quality management practitioners to measure TQM implementation (Anderson et al., 1995). In order to support the findings from the survey and to gain a better understanding of TQM implementation in Libya, semi-structured interviews were conducted within five ISO certified Libyan companies and five UAE companies. The UAE companies have considerable experience in the quality field and have all won the Dubai Quality Award. The aim here was to identify

implementation problems and barriers facing the Libyan organizations, and how they were solved by the peer organizations in the UAE.

Semi-structured interviews were also conducted with fifteen quality management professionals world-wide, especially from the Middle East, to elicit their ideas on how developing countries can best develop a TQM framework suited to their environment. The information obtained from the survey and from the interviews with quality management professionals was used to develop a TQM implementation framework which best suits the Libyan context.

5.2 Research Design

Yin (2002) defines research design as "an action plan for getting from here to there", where "here" may be defined as the initial set of questions to be answered, and "there" is a set of conclusions (answers) about these questions.

According to Kerlinger (1987) research design is the plan, structure, and strategy of investigation aimed at answering the research questions. The research design must follow on from the research questions and provide data that enables them to be answered. It should define the main lines of the strategy, including sampling methods and data collection tools and procedures to be used to collect and analyze empirical data, while taking account of limits on the resources that are available.

The design was constructed, step by step, to link the whole research together, see Figure 5-1.

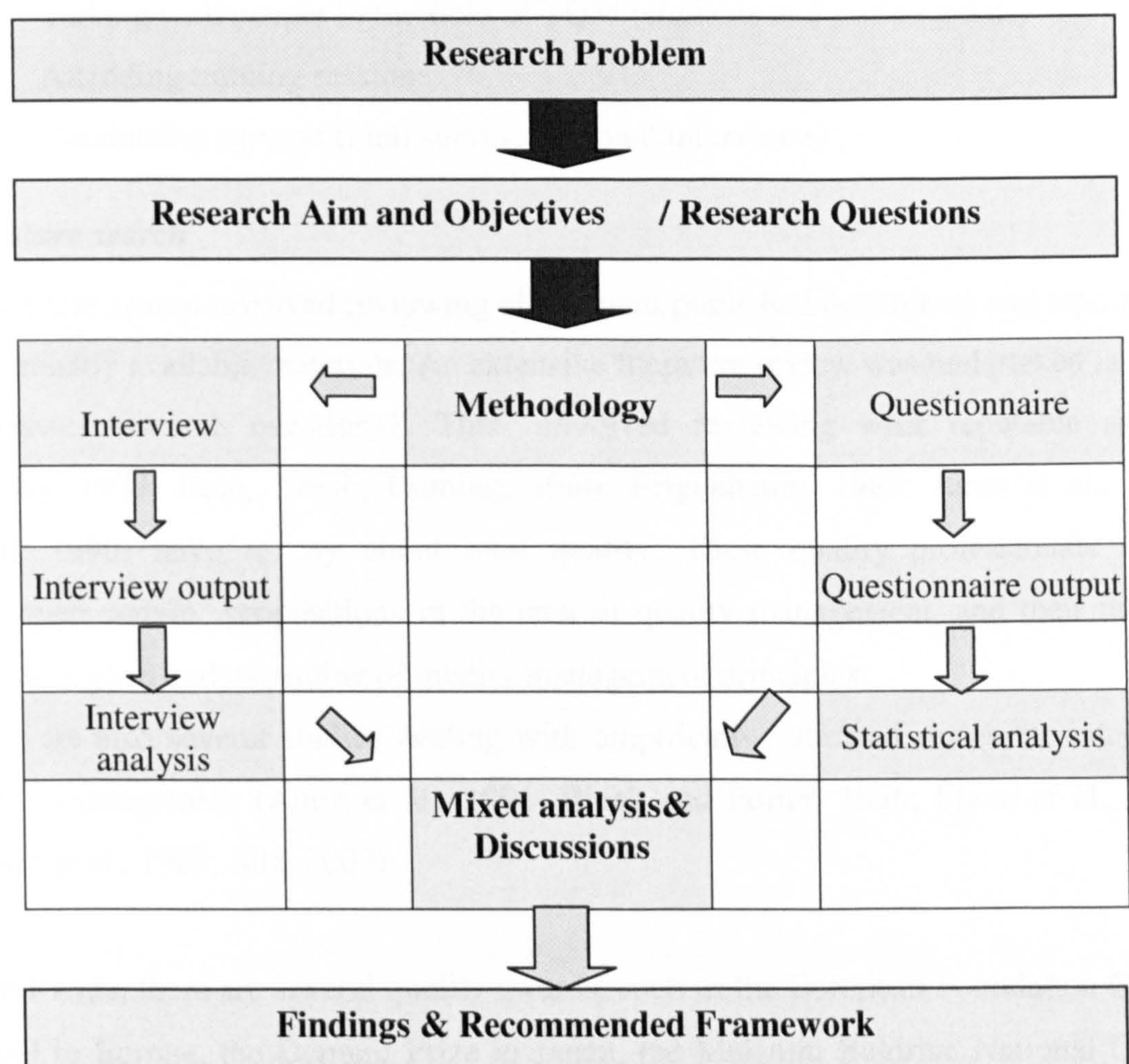


Figure 5-1: Research flow chart

5.2.1 Research Strategies

According to Robson (1993), "The research strategy or strategies, and the methods or techniques employed, must be appropriate for the questions that you want to answer."

The research strategy for this study has been developed to promote a high quality approach to the populations and sample selection, instrument design and validation, data collection, and statistical and qualitative analyses used. This research has adopted methods (both quantitative and qualitative) which have been found to be more suitable for this kind of study in order to obtain reliable and valid information. The research strategies chosen in this study are:

1. Literature search

2. Talking with people in the field of TQM (students and professionals)
3. Attending training sessions
4. Conducting surveys (mail survey, personal interviews)

Literature search

A literature search involved reviewing all relevant published documents and reports and other readily available materials. An extensive literature review was undertaken in order to answer research questions¹. This involved reviewing what reputable authors (Crosby, 1979; Dale, 1994b; Deming, 1986; Feigenbaum, 1983; Juran et al., 1993; Kanji, 1990) have to say about total quality. These quality professionals have developed certain propositions in the area of quality management, and their insights provide a good understanding of quality management principles.

There are also several studies dealing with empirically validated scales for integrated quality management (Ahire et al., 1996; Black and Porter, 1996; Flynn et al., 1990; Saraph et al., 1989; Sila, 2002).

World-wide, there are several quality awards, such as the European Foundation Quality Model in Europe, the Deming Prize in Japan, the Malcolm Baldrige National Quality Award in the USA, and the Dubai Quality Award, which use identical criteria from the EFQM model. Each award is based on a perceived model of TQM.

Talking with quality people

This refers to talking to people in the field of quality management (peers, experts, practitioners). The researcher visited several universities, attended and participated in several international conferences, and met and interviewed experts in the field of quality to explore their experience and to learn from the various different approaches they were implementing. Talking with quality people was a good way to get the latest information during the different stages of the research project.

Attending training sessions

The researcher attended many training courses to establish a clear picture of the strengths and weaknesses of different quality approaches and tools which would help

him to design a research framework suited to the Libyan context. These included: ISO 9000/94, ISO 9000/2000, ISO 14000, ISO 1800, ISO 1725, total quality management, internal auditor ISO 9000, and lead auditor 9000/customer satisfaction, research methodology, SPSS, Six Sigma.

5.3 Methods of Study

The present study used both quantitative survey methods and qualitative methods. Quantitative methods involve an inquiry into an identified problem, with the aim of producing data in the form of numbers. These data are then analyzed using statistical techniques. The aim may be to estimate population parameters, to test formal, theory-based, hypotheses, or both of those. Babbie (1995) defines the quantitative method as: “The numerical representation and manipulation of observations for the purpose of describing and explaining the phenomena that those observations reflect”. The research tends to involve a larger number of individuals drawn from the population, selected in a controlled way. Quantitative methods provide a base for making formal inferences about populations. On the other hand, qualitative methods often provide important insights into factors underlying quantitative findings.

5.3.1 The Quantitative Survey Method

According to Tanur (1982), a survey means "gathering information about the characteristics, actions, or opinions of a large group of people, referred to as a population". Surveys use questionnaires or interviews for data collection, with the intention of estimating the characteristics of a large population of interest based on a smaller sample from that population. Surveys can measure attitudes and preferences, past experiences, beliefs, future predictions, levels of knowledge and census information. For surveys to provide useful information, care must be taken in their development and use for a number of reasons, discussed below. Limits will be imposed by the time, resources and budget available.

Some of the characteristics of quantitative research from different sources (Dillman, 2000; Strauss and Corbin, 1990; Yin, 2002) are as follows:

- The goal is to develop generalizations that contribute to theory, and that enable the researcher to predict, explain, and understand particular phenomena.
- The researcher knows clearly in advance what he/she is looking for.
- All aspects of the study are carefully designed before data is collected.
- The researcher tends to remain objectively separated from the subject matter, as contrasted with, for example, the role of the participant observer.
- If the sampling design is appropriate and an adequate sample size is used, the results are statistically reliable (that is, a replication of the survey on the same population would produce similar findings, within margins of sampling variation).
- Following on from the above, results (sample-based estimates) can be projected to the population from which the sample was drawn.
- Quantitative research has the ability to effectively translate data into easily quantifiable charts and graphs.
- The quality of quantitative data can be judged using formal measures of reliability and validity.

Surveys have been widely used to assess the impact and contribution of total quality management in a number of studies (Ahire et al., 1996; Black and Porter, 1996; Flynn et al., 1990; Saraph et al., 1989; Sila, 2002). Survey data can be collected by using different modes, either singly or in combination.

Taking account of the study purpose and objectives, and as a result of the literature review and talking to people in the field of TQM, the researcher decided to use survey methods and qualitative methods in a design in which each played its own special part. This was judged to be the best way to get good reliable data, and to be able to investigate the level of TQM implementation in Libya. A combination of research methods is often used in order to improve both the reliability and the validity of the data gathered. Kaplan and Duchon (1988) state that no one approach to research can provide the richness needed to cover the whole research context.

5.3.2 Qualitative Research Methods

Qualitative research is based on the idea that the most valuable information is obtained from a relatively small group of people or individuals who are significantly involved in the topic or issue in which the researcher is interested. This information provides an understanding of the phenomenon being studied. Qualitative research is defined by Strauss and Corbin (1990) as "any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification". Qualitative data is more "rich", time consuming, and less able to be generalized.

The aim of qualitative research is to discover patterns or theories that help to explain a phenomenon of interest. Some important features are the following:

- Categories of interest emerge from informants (subjects), rather than being identified a priori by the researcher.
- The researcher is the data gathering instrument.
- Data is in the form of words, pictures or objects.
- Tentative conclusions are verified by "triangulating" among different sources of information.

Miles and Huberman (1994) emphasize the importance of reliability and validity in qualitative research, just as much as in quantitative research. To enhance reliability in qualitative research, sufficient time should be spent with the participants to get reliable information and to verify the accuracy of response (Lincoln and Guba, 1985). To maximize qualitative research validity, Scott (2003) recommends that multiple sources of information should be used to check for discrepancies in responses.

5.3.3 Combining Quantitative and Qualitative Methods

Two methods of data collection were used in this study; a questionnaire survey (quantitative) and semi-structured interviews (qualitative). The questionnaire survey was conducted to elicit the opinion of Libyan managers regarding the implementation of TQM or any other quality management system in the Libyan context. The semi-structured interviews were conducted to collect more information about the practical application of TQM principles from the same managers as those who filled out the questionnaire, and also from managers in the Dubai Quality Award winners' organizations in the UAE. The aim was to benefit from their experience when designing the framework for implementing TQM in the Libyan organizations. Each of the approaches (quantitative or qualitative) has different strengths and weaknesses. A mixed-method approach (triangulation) allows the strengths and weaknesses of methods to be counter-balanced (Miles and Huberman, 1994).

The qualitative findings generally substantiate the overall results of the quantitative analysis and add a further dimension to those results obtained in the analysis of the quantitative data.

5.4 Quantitative Survey: Population and Sample Frame

5.4.1 Population

The population is the collection of units within which the survey will be conducted. According to Särndal et al. (1992) there are two different populations with which a survey is concerned:

- **The target population:** consists of the group of units about which information is ideally wanted.
- **The survey population:** the units that we are able to survey.

The target population of this research consists of publicly-owned organizations primarily engaged in Oil and manufacturing industries in Libya. The survey population

size is approximately 48 manufacturing establishments; this includes medium size organizations (over 250 employees) and large size organizations (over 1000 employees). The size of groups was identified using a Ministry of Industry classification.

5.4.2 Sampling

Sampling is the process of selecting units (e.g., employees, managers, organizations) from a population of interest. A sample size must be large enough to give a good representation of the population, but small enough to be manageable. The two main types of sampling techniques in quantitative research are random sampling and non-random sampling.

5.4.3 Unit

A unit is the base level at which information is sought. There are two types of units:

- Selection units: a *selection unit* is a unit drawn from the population of all units that belong to the population of interest. Using random sampling (also known as “probability sampling”) provides a guarantee that the selection of units will not be biased.
- Reporting units: a *reporting unit* is a unit that reports the information required.

The reporting unit may not be the same as the selection unit. In this study, the selection and reporting unit was the Libyan manufacturing organisation.

5.4.4 Selecting A Sample

There are many different methods for selecting a sample. Among these methods are simple random sampling, stratified sampling, cluster sampling, systematic random sampling, and convenience sampling (Table 5-1).

Table 5-1: Types of sampling procedure

Term	Definition
Simple random sampling	Sampling by selecting units at random from the entire population.
Systematic random sampling	Selects the first unit at random, and all additional units are selected at a predetermined interval from the first unit.
Stratified random sampling	Divides the population units into homogenous groups (strata) and draws a simple random sample from each group.
Clustered (multistage) random sampling	First stage units (e.g. firms) are randomly selected from a listing of all such units. Second stage units (e.g. employees) are then randomly sampled from all within the first-stage units selected. This gives a random clustered sample of employees.
Convenience sampling	Selects the sample group in the easiest possible manner. If 20 units need to be sampled, the analyst would sample the first 20 available units in a population.
Purposive sampling	Selects population units according to their attributes in a way judged to reflect the population distribution and/or to suit the study aims.
Quota sampling	Specifies a distribution of the sample (e.g. by size and industry type) that matches known population distributions, but allows units to be selected by convenience, thus differing from stratified random sampling.

5.4.4.1 Random Sampling

Each member of the population to be studied has an equal and independent chance of being chosen to participate in the sample. If random selection is accurately carried out, there will be no chance of the systematic bias which can arise from subjective

judgments in sample selection. Small samples may by chance be unrepresentative of the population, but this risk can be reduced by stratified selection.

5.4.4.2 Determining the Sample Size

An important consideration in sample design is the choice of sample size. Larger samples provide greater precision but are more costly to undertake. A common approach to choosing the sample size is to specify the precision desired and then determine the optimal sample size providing that precision.

5.5 Survey Error

5.5.1 The Total Survey Error

The total survey error in the estimate is the amount by which sample-based estimates on average differ from the true value of the quantity for the survey population (Thompson, 1997). Total survey error is made up of two components; sampling error and non-sampling error. Each of these can in turn be divided into variance and bias. Variance tends to reduce as sample size increases. Bias is unaffected by sample size and can arise from under-coverage of the target population, from the sampling procedures used, from non-response, and from survey measurement procedures.

5.5.2 Sampling and Non-response Error

5.5.2.1 Sampling Variance

Sampling variance is inherent in any sampling process. It occurs where an estimate is based on a sample rather than on a complete census of the population. It produces differences between the point estimator and the population parameter. The size and direction of differences vary each time the sampling procedure is repeated.

Sampling variance cannot be avoided but can be controlled and minimized. Selecting an appropriate sampling method or design is one way of controlling sampling variance. Usually the most important factor is sample size. The range of variation in sample-based estimated tends is proportional to the square root of the sample size.

5.5.2.2 Sampling Bias

Sampling bias can occur when a sampling procedure is used that does not ensure that each population member has a calculable and non-zero chance of being selected. This happens, for example, when human judgement or convenience enter into the selection of units (see Table 5.3).

5.5.2.3 Non-response Error

Even if a sample is correctly designed and selected, error may affect it when (as usually happens) no response is obtained from some of the selected units. Such non-response can have two effects. Firstly, it reduces the effective sample size and thus makes the results less precise and reliable. This effect can be counteracted by making a preliminary estimate of the rate of non-response and inflating the sample size in order to counter-balance it.

Non-response bias is much harder to deal with. When checks can be made it usually turns out that the units that fail to respond are not a random selection from the population, but tend to have attributes such as being uninterested or hostile to the survey, which in turn are linked to other attributes that the survey is attempting to measure, such as adoption of TQM. High rates of non-response can be a serious threat to the validity of survey results where strong linkages of this kind exist. Thus they have the same kinds of effect as biased sample selection.

5.5.3 Non-sampling Error

Non-sampling errors are not easy to quantify, and include:

- **Coverage error:** this can occur when the sampling frame (e.g. a population listing) does not cover the whole population, or lists some units several times.

- **Measurement error:** this can occur because the recorded responses do not always reflect the true characteristics of the respondents, e.g. through respondents' misunderstanding or omission of survey questions, or different interpretations by different respondents, or failure or inability to provide accurate answers. Careful design and testing of questionnaires is very important in avoiding this.
- **Processing and estimation error:** this results from failure to transfer responses correctly to an analysis medium, and from failure to utilize appropriate statistical estimators.

Any one of the above sources of error (sampling and non-sampling) may make the survey results unacceptable (Dillman, 1999; Groves, 1989; Salant and Dillman, 1994). According to Garvin (1988) and Groves (1989), all survey errors must be attended to in order to have confidence in the precision and freedom from bias of estimates based on sample surveys. The accuracy of any statistic is determined by the joint effects of "sampling" and "non-sampling" errors. Estimates based on a sample will differ somewhat from the figures that would have been obtained if a complete census had been taken using the same survey instruments, instructions, and procedures. It is important to minimise both variance and bias.

5.5.4 Minimizing Non-Sampling Error

In this survey, non-sampling errors were kept to a minimum by methods built into the survey at the planning, data collection, and data processing stages, including:

- Careful selection of the time at which the survey was conducted;
- Using an up-to-date and accurate sampling frame and careful questionnaire design;
- Attending training in survey methods and interview techniques;
- Being aware of all the factors affecting the topic under consideration
- Planning for follow-up of non-respondents;

5.5.5 Response Rate and Non-response

In the case of a postal survey, non-response occurs when the respondent does not return the questionnaire, or return it too late. Non-response has two effects on data: firstly, it introduces bias in estimates when non-respondents differ from respondents in the characteristics measured; and secondly, it contributes to an increase in the sampling variance of estimates because the effective sample size is reduced from that originally sought. A high response rate is extremely important when results are to be generalized to a larger population. “The lower the response rate, the greater the sample bias”. (Fowler, 1984). According to Lepkowski (1989), “if we have a large amount of non-response but we can understand why and can still be sure that our pool of respondents is representative of the larger population, we can proceed with our analysis”.

In this research the response rate was very good by the standards set by comparable studies; about 75% of the sample members returned a questionnaire. The researcher tried his best to maximize the response rate by taking the following measures.

- Care was taken in designing the questionnaire;
- The questionnaire was pilot tested to make sure that questions were simple; unambiguous and written in terms the target population could all understand
- Processes were followed in data collection to minimize non-response;
- The researcher had attended training courses in surveys design and administration;
- Group briefing sessions were held by the researcher for all participants prior to questionnaire distribution;
- Respondents were assured of confidentiality;
- Respondents were motivated to complete the questionnaire;
- All questionnaires were handed personally to every participant;
- Returning the questionnaire was an easy and straightforward task;
- Close follow-up was undertaken to complete the survey;

- Follow-up of non-respondents was undertaken to check that the responding sample was representative.

The researcher believes that the group briefing technique used was very effective in encouraging response. He conducted a telephone follow-up of those sample members who did not return a questionnaire (25%) and found that the respondents and non-respondents appeared very similar. The main reason for non-response was the leave schedule of the people working in the oil sector; this is unlikely to have been associated with any of the variables that the survey aimed to measure. Accordingly, it was assumed that non-respondents as a group were similar to respondents, and that any bias introduced by excluding the non-respondents from the analysis would be very small.

5.6 Samples Used in the Study

5.6.1 Quantitative Survey

In this research the researcher had conducted an empirical study of two important sectors of Libyan industry, namely the oil and petrochemicals sector(process) and the general manufacturing sector. The two sectors together constitute an important and influential part of the entire Libyan industrial economy. However, the time and resources available for carrying out the research were not sufficient to enable him to cover the whole of the Libyan economy, or all Libyan industrial and commercial enterprises. Those sectors that were not covered (private companies are an obvious example) are likely to differ from the two that were covered in many important ways relevant to modernization and efficiency. Furthermore, the study deliberately focused on the larger enterprises within each sector and excluded the smaller enterprises. This was partly because the larger enterprises account for the largest share of total economic activity in the two sectors, and partly because insufficient time and resources were available to cover smaller enterprises. It is likely that smaller enterprises differ from larger enterprises in terms of the technology used, their level of modernization, and the training and attitudes of managers, plus the fact that the smaller enterprises were under evaluation during the survey period and that most of them ceased because of the reforming and privatization programmes imposed by the government. Private

organizations were excluded because they were all small and newly established (private businesses had not been allowed in county for about twenty years).

Within the two chosen sectors, the researcher proceeded by drawing probability samples of enterprises classified in each sector. This use of probability sampling was necessary because of limits of time and resources available to the researcher. The samples of enterprises were drawn randomly to avoid introducing any bias on the part of the researcher. Five enterprises were selected within each of the two sectors. Within the selected enterprises, the researcher drew stratified samples of staff from various levels to act as survey respondents. The eligible respondents were selected randomly for the study, and the sample included in this study was 400 eligible employees, see Figure 5-2. The survey results are based mainly on standardized measures of the perceptions of staff of the ways in which their enterprises operate, which are relevant to industrial efficiency and output quality.

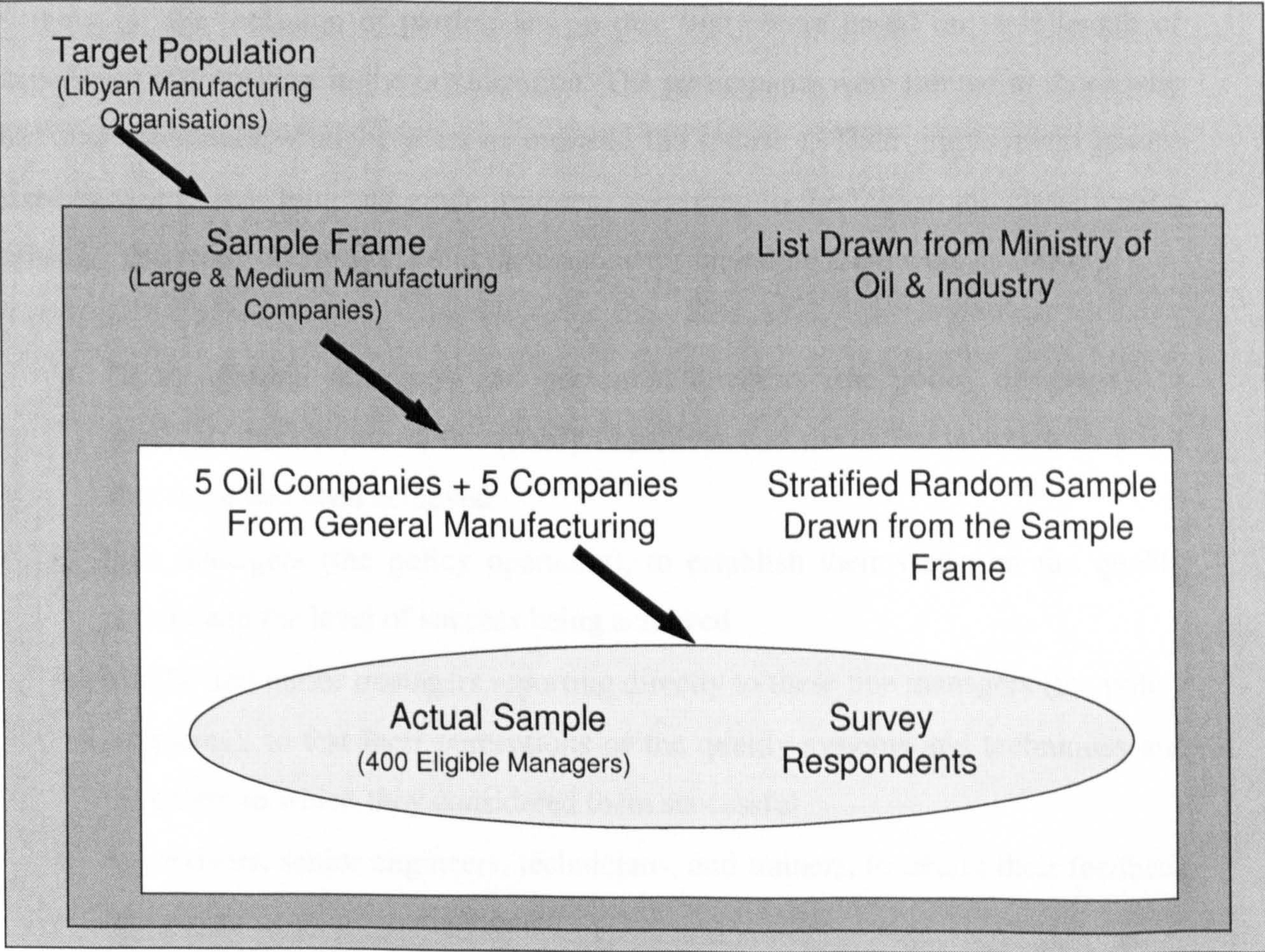


Figure 5-2: Population and sample

5.6.2 Qualitative Study

Qualitative research is generally based on non-probability and purposive sampling, rather than probability or random approaches (Miles and Huberman, 1994). Sampling decisions are made for the explicit purpose of obtaining the richest possible source of information, and to answer the research questions. Qualitative research usually involves smaller sample sizes than quantitative research (Morse, 1994). Sampling in qualitative research is flexible and often continues until no new themes emerge from the data; a point called data saturation. Two samples were taken from the Libyan organizations and UAE organizations to enrich the data gained from the questionnaire survey.

5.6.3 Sample Selection Criteria

Criteria for the inclusion of participants in this study were based on their length of experience and position in the organization. The participants were limited to those who had had experience of eight years or more in the industry. Their employment grades were between grade nine and grade fourteen, according to the Libyan job classification scheme. The types of employee and the reasons for including them were as follows.

- Senior general managers and personnel directors (the policy designers), to establish their views on the quality objectives and the extent to which they felt that these had been achieved
- Line managers (the policy operators), to establish their views on the quality policies and the level of success being achieved
- Middle and junior managers reporting directly to these line managers (the policy recipients), to test their perceptions of the quality systems and techniques and the extent to which they considered them successful
- Supervisors, senior engineers, technicians, and trainers, to obtain their feedback on involvement and motivations.

5.7 Questionnaire Design

The aim of questionnaire design is to translate the research objectives into specific questions. The answers to these questions should provide data for answering all or some of the research questions. Planning and designing the questionnaire is one of the most critical stages in the survey development process, and from the literature review it seems that most problems with questionnaire data can be traced back to the design phase of the project.

5.7.1 What makes a good reliable questionnaire?

Good questionnaire construction is critical to the success of a survey. Inappropriate questions, incorrect ordering of questions, incorrect scaling, or bad questionnaire format can make the survey valueless. A poorly designed questionnaire can be the main source of non-sampling errors and can influence the response rate achieved in the survey.

According to Robson (1993), and Fowler (1984) the main characteristic of a good questionnaire are as follows:

- Questions need to be clear, specific, short, easy and quick to fill in
- Questions must interest the respondents enough for them to be motivated to provide the information
- A good question leaves no ambiguity in the mind of the respondent
- Questions must be non-threatening
- Good questions provide reliable and valid information
- The questionnaire should respect respondents' dignity and privacy
- The questionnaire should not "re-invent the wheel" where previous studies have provided satisfactory question design models

This survey questionnaire was designed to capture information about the quality of management practices in the Libyan manufacturing organizations, and was based on the eight critical success factors which were determined by the researcher after a comprehensive review of published literature (Black and Porter, 1996; Saraph et al.,

1989; Powell, 1995; Tamimi and Gershon, 1995). All of these studies used reliable and valid instruments to evaluate quality management in either manufacturing or service organizations.

Most of the constructs were operationalized by modifying the validated scales used in studies mentioned above. Some modification was necessary because direct use of previous instruments was not always possible. A few new items were constructed based on the literature, which is an approach commonly used by researchers when previous instruments are not available (Grover, 1993).

The first part of the questionnaire consists of 52 variables or statements, which were extracted from the published literature of leading TQM practitioners and academics in order to enable the participants to evaluate and measure the implementation of quality initiatives in their organizations. The second part of the questionnaire was designed to establish whether the company had a formal quality management system in place, such as ISO 9000, TQM, Six Sigma, or any other system. The third part of the questionnaire was designed to collect fundamental information such as the type of service industry, size of the company, the level of education, the position of the respondent in the company, the general experience in the company, and their experience in the quality field.

5.7.2 Questionnaire rating scale

After a comparison of different rating scales, the researcher selected an approach that he believed would make the questionnaire easy for the respondents to answer, and thus encourage them to participate. A 10-point Likert scale was felt to be the most suitable to provide the information needed, and was found to be easy to answer and appropriate to the respondents' level of knowledge and experience. This scale uses a 10-point rating scale based on concepts often used in daily life and casual conversations.

This scale has been used by Kanji and Tambi (2002) to evaluate TQM implementation in the USA, the UK and Malaysia, and has been proven to be a reliable tool, and one which facilitates a good level of comparison.

5.7.3 Characteristics of the 10-point Likert scale

- **Clarity and comprehensibility:** the concept of a 10-point scale rating scale is easily understood, and needs no explanation, especially across language and cultures.
- **Suitability for correlation and regression:** because of their granularity, sensitivity and discrimination, 10-point scales lend themselves better to correlation and regression analysis than scales with fewer values.
- **Avoids a numeric mid-point.**
- **Can detect small incremental changes over time.**
- **Allows the researcher to see clearly the weak points in the implementation of quality management, so that he/she can concentrate on understanding and taking appropriate corrective measures.**

Wittink et al. (2003) compared 5-point and 10-point Likert scales and concluded that, for an equal amount of statistical precision, the 10-point scale requires 71.3% of the sample of a 5-point scale. They also add that the 10-point scale has a higher level of reliability than the 5-point scale.

5.7.4 Ethical Issues

All social science researchers have an ethical obligation to protect the welfare of the people they study, and the researcher carefully thought through the likely impact on the participants during each stage of the survey. The specific ethical issues stated below were addressed by the researcher to safeguard the rights of the participants in the research activities:

- Respondents were informed that participation in the survey was voluntary and that they had the right to decline to respond to any question asked.
- The researcher explained the objectives and the importance of the research and clarified the importance of their answers in obtaining reliable results and enabling the researcher to design a good framework for TQM implementation.

- It was made clear to the participants that any information submitted would be used for the purpose of academic research in the context of a PhD project, and that it would not be used for any other purpose.
- It was ensured that information submitted would be stored and collected securely and in confidence, both in electronic and paper format.
- The researcher promised that he would represent the collected data honestly and analyse it to the best of his experience and ability.
- Provision had been made to respond to queries and problems raised by the participants during the course of the study.

5.7.5 Questionnaire Validity and Reliability

Several strategies were used to examine the validity and reliability of the questionnaire (e.g., literature review, experts' evaluation, pilot testing, factor analysis, internal consistency analysis).

5.7.5.1 Questionnaire Reliability

An internal consistency analysis was performed on the set of 52 statements based on the eight starting constructs. This indicated that the reliability of multi-item scales corresponding to them ranged between 0.828 and 0.901. Generally, a reliability coefficient of 0.70 or more is considered to be good (Nunnally, 1967). The instrument developed for measuring TQM implementation using CSF (critical success factors) was considered to be reliable. For further details, see Section 6.4.1.

5.7.5.2 Questionnaire Validity

Validity is a term used to evaluate the truthfulness or accuracy of the results, and refers to the extent to which the questionnaire measures what it was intended to measure. According to Flynn et al.(1990) and Nunnally (1978), there is no single way of determining the validity of a measuring instrument. Three different types of validity are generally considered, namely content validity, criterion validity and construct validity (for further details, see Section 6.4.2). The researcher believes that the instrument used for measuring and implementing TQM has content validity, since the development of

the measurement items was based primarily on an extensive review of the literature and detailed evaluations carried out by academicians and practitioners.

5.7.6 Questionnaire Translation

The first version of the research instrument was in English and was validated through the feedback from professional colleagues in academics and industry. Because the participants' main language was Arabic, the English version was translated into Arabic by professionals from the university and industry, each of whom was fluent in English and Arabic, to ensure that every respondent could understand the questionnaire.

5.7.7 Questionnaire Pilot Test

Pilot testing is a good means of obtaining feedback on the content, clarity and style of the survey. The proposed questionnaire was sent by e-mail to international professionals in the field of quality management for their comments on the structure of the questionnaire, and to test the validity of the content. The Arabic version of the questionnaire was administered to a small sample of individuals (40 managers), who were very similar to the target population (Fink and Kosecoff, 1998; Nunnally and Bernstein, 1994). Each participant in this pilot test completed the questionnaire and provided feedback to the researcher regarding the clarity of the questionnaire. The main purposes of the pilot test were to:

- Determine whether the questionnaire instructions were easily understood.
- Identify questions that could be misunderstood or were poorly worded.
- Determine whether rating scales were understood.
- Determine how long it would take participants to complete the survey.
- Determine the participants' reactions to the survey in general.
- Make an initial reliability assessment of the measurement scales.

As a result of the pilot test and the feedback received from the debriefing session after the completion of the pilot test, expert opinion and reliability check, the researcher discovered that the questionnaire needed to be shortened, and that some of the questions

needed to be reworded, because most of the participants did not understand words such as vision, mission, internal customer, empowerment, or customer loyalty. This was an indication of low understanding of quality management principles, and also of a low level of quality awareness. As a result of the pilot study the questionnaire was redesigned and simplified.

5.7.8 The Cover Letter

A cover letter accompanied the final questionnaire, explaining the purpose of the questionnaire, how the survey information would be used, how to complete the questionnaire, and how to return the completed questionnaire. The participants were assured of confidentiality and were asked participate seriously by answering the questionnaire with their best and unbiased opinion.

5.8 Data Collection

This section of the research describes the methods and procedures used to collect data for the variables of interest. Both secondary and primary data have a role in the data collection process. A thorough search of the secondary data was undertaken prior to conducting primary data research. The secondary information was used by the researcher to gain an initial insight into the research problem and to identify the key questions and issues that would need to be addressed by the primary research.

5.8.1 Secondary Data

Secondary data was used to establish the background to the history of the quality movement, TQM, in developing countries, and to determine the critical success factors, which was answered by some of the research questions through the analysis of the secondary data. The secondary data used in this research was obtained from many sources, which can be classified as:

- **Paper-based sources:** books, journals, periodicals, abstracts, research reports, conference papers, market reports, annual reports.
- **Electronic sources:** the following online databases were used :

1. Elsevier Science
2. Emerald
3. ABI Inform Global (ProQuest Direct)
4. Anbar International Management Database

5.8.2 Primary Data

Primary data can be collected by means of a number of methods, singly or in combination. Most of the time, a combination of methods is used in order to improve both the reliability and validity of the data gathered. The choice of data collection method, such as mail questionnaire, telephone interviews, or face-to-face interviews, is significant because it affects the quality and cost of the data collected.

The researcher compared the most commonly-used methods and selected the two that according to the methodological literature should provide the most effective means of achieving reliability and validity in meeting the study's information objectives (Table 5-2).

Table 5-2: Comparison of Survey Media

Criteria	Telephone	In-person	Mail	E-mail	Internet
Ability to handle complex questions	Good	Excellent	Poor	Poor	Poor
Ability to collect large amounts of data per respondent	Good	Excellent	Fair	Fair	Fair
Accuracy on sensitive questions	Fair	Fair	Good	Good	Good
Control of interviewer effects	Good	Poor	Good	Good	Good
Degree of sample control	Good	Excellent	Poor	Good	Fair
Time required	Excellent	Fair	Poor	Excellent	Good
Probable response rate	Good	Fair	Fair	Fair	Fair
Cost	Good	Poor	Good	Excellent	Good
Ability to ensure accurate questionnaire completion	Poor	Excellent	Excellent	Good	Good

The main conclusion to be drawn from most of the academic studies reported in the literature is that the major methods of research can often be combined effectively to boost response rate.

5.8.3 Selecting the Best data Collection Method

The survey type is usually determined by a number of factors, such as communication with respondents (to collect the best information), length and complexity of the survey instrument, sample size, timing, and budget.

Two of the methods shown in Table 5-2, the self administered questionnaire (mail questionnaire) and semi-structured interviews, were seen as being, in combination, the most suitable to fulfil the objectives of this survey.

5.8.3.1 Quantitative Data (Mail Questionnaire)

From the above, and from the review of the research methods and data collection, it was clear that a mail questionnaire would be an appropriate method to obtain data from the respondents for the following reasons:

- It is a relatively low-cost method;
- It can be well designed;
- It can be made anonymous;
- It can involve large groups;
- It can be easily interpreted.

However, using mail surveys is not always easy to conduct in many developing countries where:

- The postal services are not at all reliable;
- People are reluctant to participate in the questionnaires, if they do not know who is doing it and why;
- The respondent may fear being held responsible for his/her comments
- Lack of incentives and motivation to respond.

Combinations of these factors could cause the instrument to be invalid and the data gathered unreliable, and could lead to a low rate of response. Low response rates are among the most difficult of problems in survey research, as they can ruin a well-designed survey effort.

To get a high rate of response, and to encourage the respondents to participate positively and provide good, reliable data, the researcher

- Must have a good knowledge of the subject of the questionnaire;
- Should be interested in the subject matter;
- Should be aware of the importance of the results of the questionnaire, and how it could affect his/her fields of interest in the future.

To overcome the disadvantages of self-administered surveys, whilst taking advantage of the cost savings, and to encourage the respondents to participate positively, the researcher decided to use the “group administration” approach. According to Dillman (2000), giving questionnaires to an assembled group of staff to complete is likely to be the most effective method of implementing a survey of this kind. Adopting this

approach involved dividing the sample randomly into groups of 20-25 individuals to attend :

1. A two-hour briefing on the background to total quality management, including approaches, techniques, tools and methods of implementation.
2. A briefing session on the questionnaire's purpose, contents, construction, and how to fill in the questionnaire.

Sessions of this kind were repeated until the whole sample of 400 attendants were covered. The researcher's role was to present the background of the TQM approach and how it was implemented in other parts of the world, along with its advantages and disadvantages. The researcher explained the TQM philosophy and tried to make sure that the participants understood the concepts and what was involved in implementing them. The process was interactive, with delegates contributing to the discussion with comments and examples from their own experience. By the end of the group administration session, the questionnaire was handed to respondents by the researcher, who explained the purpose of the survey, how it should be filled in, and how important their participation was in forming the results of the whole survey, and then they were assured of the confidentiality of their information. The questionnaire was left with the participants to be completed within two weeks. They were requested to put the completed questionnaire in an envelope, seal it and return it to the organization's training department, where a box had been placed to collect the completed questionnaires.

5.8.3.2 Qualitative Data Collection (Interviews)

Qualitative sampling involves small, but information-rich cases. Sampled cases are chosen based upon their ability to fill in gaps of information and add to the answering of study questions.

Phase two of the research incorporated two stages of semi-structured interviewing. The semi-structured interviews (Part 1) were used to investigate and understand the process of TQM implementation (in Libya and the UAE) and to explore the critical

stages that each organization in each country went through from the early stages of deciding to implement TQM, up to the date when TQM was launched and sustained.

Semi-structured interviews (Part 2) were carried out with experienced quality management professionals (academics and practitioners). Fifteen interviews were carried out, spaced over the duration of the survey. Most of the interviews were conducted during the international conferences the researcher attended, and some were arranged with academics at their universities.

The survey data from quantitative phase one had been designed to investigate the level of TQM implementation in the sample of Libyan organizations. The results showed low levels of implementation of all the factors which were tested by the questionnaire. In order to clarify why, semi-structured interviews were conducted to answer some of the 'why?' and 'how?' questions and to help enrich, interpret and understand the quantitative data. The interview structure was therefore predetermined by the structure of the questionnaire and the completed questionnaire was used as a guide in the interviews within the Libyan organizations.

The information gathered from the semi-structured interviews (with Libyan and UAE organizations), summarized the ways in which quality initiatives were implemented in both countries, and explained why there are clear differences in the way they appear from the analysis between Libyan organizations and organizations from the UAE.

The information gathered from the interviews with quality professionals helped the researcher in proposing in this report the most practical framework for implementation in the Libyan environment. Executives and/or managers to be interviewed (from the Libyan organizations) were selected from questionnaire respondents who indicated that they would be willing to participate in this further research. The executives and/or managers to be interviewed from the UAE organizations were selected from manufacturing organizations which had won the Dubai Quality Award and were recommended by the Dubai Chamber of Commerce, which runs the Dubai Quality Award.

The interviews were pilot-tested by conducting two interviews within the Libyan organizations and two interviews in the UAE, to get an impression of how the interactions and the timing would go, enabling the subsequent interviews to be refined with a view to obtaining responses that were more specific, clear, valid and reliable.

5.8.4 Interview Process

In advance of the interviews, the researcher sent a letter of invitation to all potential interviewees, describing the purpose and background of the research and offering assurances of confidentiality and encouraging participation. Each participant was given the set of questions to look over before the interview session. An interview guide was prepared and structured similarly to the questionnaire, based on the extent of the implementation of the critical success factors.

All interviews were conducted with respondents at their organization's site. Two representatives from each organization were interviewed, to obtain more varied and comprehensive feedback from each organization (and to compare the consistency of responses). The interview was conducted by asking each question in turn, and asking supplementary questions where appropriate to clarify and expand on the responses given. All interviews were tape-recorded and transcribed in full.

5.8.5 Data Analysis

The data from the questionnaire was collected during the summer of 2003, while the interview data from the Libyan organizations was collected during the period from early June to the end of August 2004, and the interview data from the UAE organizations was collected during September and October 2004.

5.8.5.1 Quantitative Data Analysis

The first phase of the data analysis was essentially quantitative. This phase dealt primarily with statistical analysis of the responses to the survey data, and a variety of methods were applied in this phase. All completed questionnaires returned from the respondents were reviewed for completeness, accuracy and quality of data. 283 useable questionnaires were coded and entered into a preset SPSS (Statistical

Package for the Social Sciences) (11.5) software program. Basic statistical analyses were conducted for the observation of frequencies, percentages, means, and standard deviations as a method of data examination. Comparisons between the two groups typically used a t-test for means.

5.8.5.2 Qualitative Data Analysis

It was clear from the data analysis (quantitative survey) that implementation and awareness of all QTM-related factors was low in the Libyan organizations. In order to understand why, a set of semi-structured interviews was undertaken, using the completed questionnaire as a guide. twenty interviews were conducted to see how quality initiatives were introduced in both countries (Libya and the UAE), and to see what difficulties were faced and how quality approaches could be improved.

The process of qualitative analysis and interpretation was guided by the original research objectives, as well as by the themes that emerged from the data gained from phase one (the questionnaire). Content analysis was used to identify differences in the main themes and critical success factors that emerged for both Libyan and UAE organizations.

The interview analysis revealed that the qualitative analysis supported the results gained from the quantitative analysis and explained why there was a clear lack of implementation of the critical success factors of TQM, and the problems that Libyan organizations faced and still face.

5.9 Summary

This chapter presented an overview of the methodology used in this research study, which was driven predominantly by the research objectives, and was intended to answer the research questions. Various strategies and methods have been considered, including literature searches, talking to quality professionals, attending training courses, and surveys (questionnaires and personnel interviews).

The population and sample were carefully chosen, and the questionnaire was designed to ensure that the largest possible response rate was received. The research instrument was pilot tested and was found to be valid and reliable. Data analysis was

carried out using SPSS software to conduct statistical analysis and content analysis for qualitative data.

The next chapter, Chapter (6), will present the results of the study for quantitative data.

The purpose of this chapter is to provide results from a survey questionnaire sent out by the researcher to investigate the level of the quality initiative implementation in Libyan companies and to answer the third research question in section 1.3 in Chapter one. A series of analyses were carried out using SPSS (Statistical Package for Social Scientists) (11.5) to test instrument reliability and validity. Descriptive analysis was used to measure of central tendency, frequency tables, means, and descriptive cross tabulations.

Chapter 6

6 Quantitative Analysis

6.1 Introduction

The primary purpose of conducting the questionnaire survey and interviews was to produce data that will answer the research questions. The process of data analysis is choosing the appropriate analysis to use for each item of the questionnaire (e.g., frequencies, averages, content analysis). The questionnaire survey was conducted to elicit the opinions of Libyan managers and engineers regarding the implementation of TQM or any other quality management system from a Libyan perspective.

In this chapter, section 6.1.1 discusses of statistical methods which were used in survey questionnaire data analyses. Section 6.2 describes the steps to quantitative data analysis, while section 6.3 shows the tools used to measure the questionnaire instrument reliability and validity. Section 6.4 describes the participants who completed the survey with respect to the following demographic variables: (a) job title, (b) level of education, (c) years of experience in current/similar job and (d) years of experience with quality practices. Section 6.5 shows what quality

management technique is mostly used in Libyan companies. Section 6.6 summarizes the whole chapter

6.2 Statistical Methods

Statistics is a collection of methods for gathering, analyzing, interpreting, presenting, and making valid conclusions of numerical data, possibly followed by predicting or forecasting of future events based on a mathematical model.

The main principle of statistics is that a population can be represented by a sample of the population when the sample is sufficiently large and when the sample is composed of a random selection of units. Statistics is grouped under two broad categories, *descriptive* and *inferential* statistics, as shown in Figure 6-1.

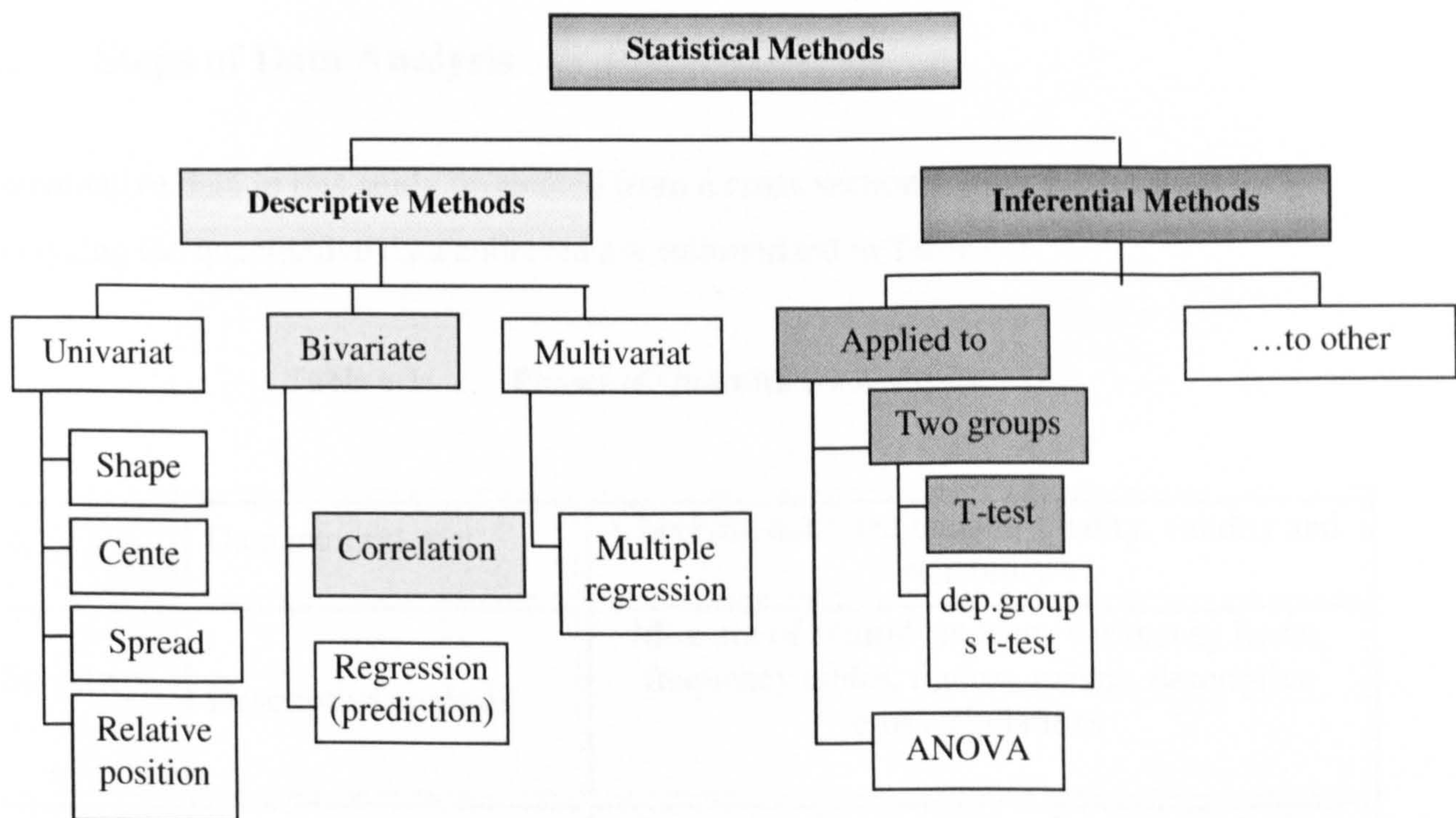


Figure 6-1: Statistical Methods

6.2.1 Descriptive Statistics

The purpose of descriptive statistics is to make the data collected more easily comprehensible by using graphs, tables, and a computation of various descriptive measures such as the measures of central tendency (mean, mode, median), and measures of variability (variance, standard deviation) (Babbie, 1995).

6.2.2 Inferential Statistics

Inferential statistics are used to make inferences from a smaller group (sample) to a larger group from which the smaller group was taken (population). With inferential statistics, we are trying to reach conclusions that extend beyond the immediate data alone. Examples of inferential statistics used in this study include t-tests and, Pearson’s r.

6.3 Steps of Data Analysis

Quantitative data in this study originated from a cross sectional survey. The steps for analyzing the quantitative data collected are summarized in Table 6-1.

Table 6-1: Phases of Quantitative Analysis

Step one	Data integrity test	Checking collected data for quality, validity and reliability
Step two	Descriptive analysis	Measure of central tendency for survey items; frequency tables, figures, means, descriptive cross tabulations
Step three	Relationship/ prediction	Determine the associations between variables and the strength of relationship.
Step four	Data comparison and integration with qualitative data	Mixed methods analysis can address many more comprehensive research purposes than do quantitative or qualitative research alone

Completed questionnaires were reviewed for completeness and accuracy; they underwent several pre-analyses, such as error checks and data editing. The most common errors were non response, inconsistent response, and wrong entry. Non responses were followed up and it was found that the non-respondents were similar to other respondents. Inconsistent response was corrected based on researchers' best judgment when comparing it with other related responses. Data were then coded and entered into a preset SPSS (Statistical Package for Social Scientists) (11.5) and a series of analyses were carried out to test instrument reliability and validity.

6.4 Instrument's Reliability and Validity

Reliability and validity are very important issues to consider when planning and carrying out any type of research. In simple terms, reliability means how easily research could be duplicated by another individual. Validity refers to how clear the purpose and method are in terms of results obtained and whether these measure what they were intended to, Flick (2002).

6.4.1 Reliability

Reliability is concerned with the accuracy (consistency, stability and repeatability) of a measure in representing the true score of the subject being assessed on a particular dimension.

The reliability analysis of an instrument assesses its ability to yield consistent measurements. The internal consistency of a set of measurement items refers to the degree to which the items are homogeneous, and can be estimated using a reliability coefficient such as Cronbach's alpha (Nunnally, 1967). Cronbach's alpha correlates each item with each other item, and gives the total score. Items with weaker correlations can be removed to leave an instrument with a high degree of homogeneity.

Churchill (1979), stated "Coefficient alpha *absolutely* should be the first measure one calculates to assess the quality of the instrument." When the reliability of a latent

variable is low the standard practice is to drop items until the coefficient reaches the desired threshold coefficient.

An internal consistency analysis was performed for each statements corresponding to each of the eight constructs, see section 4.4. The results in Table 6-2 show that the values of Cronbach’s alpha derived for the constructs ranged between 0.828 and 0.901. Generally, reliability coefficients of 0.70 or more are considered good (Nunnally, 1967). Accordingly, the instrument developed for measuring TQM implementation using CSF was considered to be reliable.

Table 6-2: Instrument Reliability

Eight Critical Success Factors	Question Number	Number of Question	Question Deleted	Alpha
Top Management Commitment (TMC)	1-8	8	None	0.86
Customer Focus (CF)	9-13	5	None	0.83
Process Management (PM)	14-21	8	None	0.88
Training &Development (T&D)	22-28	7	None	0.89
Employees Involvement (EI)	29-37	9	None	0.90
Quality Data and Measurement (Data)	38-42	5	None	0.88
Supplier Management (SM)	43-47	5	None	0.85
Continuous Improvement (CI)	48-52	5	None	0.90

6.4.2 Validity

Validity is a term used to evaluate the truthfulness or accuracy of the results, and refers to the extent to which it measures what it was intended to measure.

According to Flynn et al. (1990) and Nunnaly (1978), there is no single way of determining the validity of a measuring instrument. Three different types of validity are generally considered and these are shown in Table 6-3.

Table 6-3: Different Types of Validity

Types of Validity	Definitions
Content validity	The degree to which the items in the measurement instrument represent the domain or universe of the processes under study.
Construct validity	The degree to which the measurement instrument represents and acts like the processes being measured.
Criterion validity	The degree to which the measurement instrument is able to predict a variable that is designated a criterion.

6.4.2.1 Content Validity

Content validity is based on the extent to which a measurement reflects the specific intended domain of content (Nunnally, 1978). Content validity is always subjectively estimated by the researcher Yosof and Aspinwall (2000), and it is determined when the instrument is designed. Content validity is usually established primarily by reviews of the literature and expert judgments (the proposed questionnaire was sent by e-mail to international professionals in the field of quality management for their comments on the questionnaire’s structure and contents).

In this study, the researcher believes that the instrument used for measuring TQM implementation in Libyan manufacturing organization has a content validity since it is based on the previous studies of Saraph et al. (1989), Black and Porter (1996), and Ahire (1996).

Pilot-testing was also a good means of obtaining feedback on survey content, clarity, and the time needed to fill it in. The questionnaire (Arabic version) was administered to a small sample of individuals (40 managers), who were very similar to the target population (Fink and Kosecoff, 1998; Nunnally and Bernstein, 1994), where each completed the survey and then provided feedback to the researcher regarding questions of clarity, and areas of confusion.

As a result of the pilot-test and the feedback from the debriefing session at the completion of the pilot test, experts' opinions, and reliability checks, the researcher discovered that the questionnaire needed to be shortened and some of questions reworded where most of the participants had not understood some words. These included: vision, mission, internal customer, empowerment, customer loyalty, all of which gave an indication of the low understanding of quality management principles and also the low levels of quality awareness, which was proved later, after the data analysis, to be a fact, i.e. that awareness was targeted in most of the organizations to quality systems implementation teams only.

The rest of the employees and managers who should be the tools for implementation of any quality initiatives were ignored during the awareness period. Inputs received from the pilot-test group and from the experts' opinions were incorporated into the final questionnaire format before it was distributed.

6.4.2.2 Construct validity

Construct validity is an operational concept that examines whether the measurement scales represent and act like the attributes being measured (Cronbach, 1971; Nunnally and Bernstein, 1994), and according to Jaeger (1997), "factor analysis is used extensively in research. It is particularly useful as a tool for examining the validity of the measurement characteristics of attitude scales". Figure 6-2 shows the route to measurement scale validation.

Factor analysis is considered to be “a powerful and indispensable method of construct validation” (Kerlinger, 1986). It is often used with newly designed questionnaires to provide a measure of construct validity of the instrument. The more variance explained by the factors resulting from the factor analysis, the more powerful the instrument in measuring what it is supposed to measure (Mallak et al., 1997).

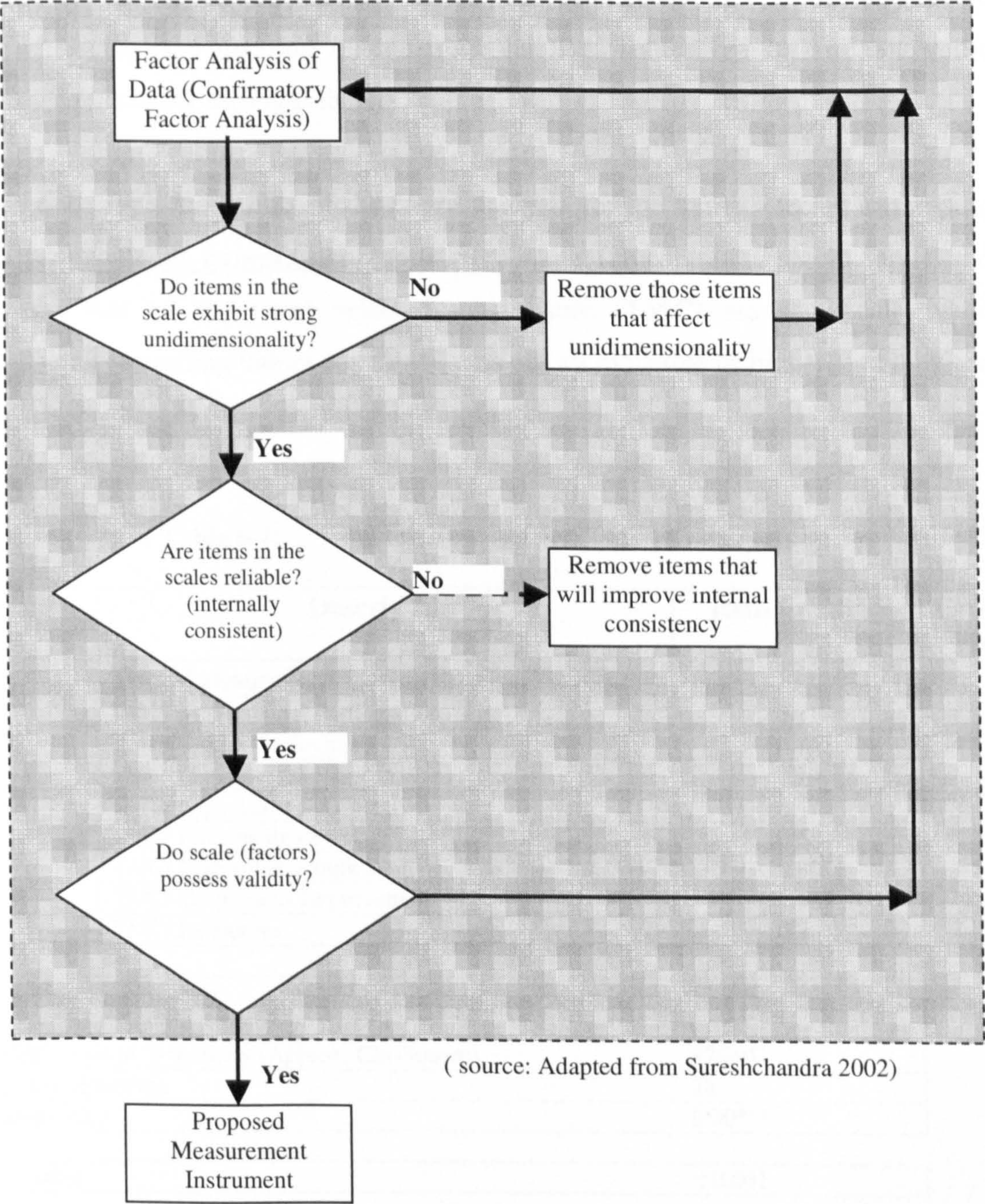


Figure 6-2: Validation of the Measurement Scale

6.4.2.3 Results of Factor Analysis

The construct validity of the scales in the measurement instrument used in this study was assessed using factor analysis through SPSS. Factor analysing for each designed construct was used to test the construct validity of each critical factor measure using the principal components factor analysis with varimax rotation. The data analysis showed that all items of the eight measures found to be more than 50 per cent and formed a single factor. According to Black and Porter (1996), the unifactorial nature of each factor is a measure of construct validity. Tables 6-4 to 6-11 show the extracted factors for the eight factors.

Table 6-4 shows the results of the factor analysis for the items selected to measure Top management commitment construct when forced into a single factor and confirms that all the items selected to measure (TMC) are statistically valid measures. The loading values for these items are all moderate or higher, and they can collectively explain 50.9 percent of the variance.

Table 6-4: Factor Analysis for (TMC) Constructs

Variable	Description	Item Loading	Cronback Alfa
X1	Top Management Commitment (TMC)	-	0.86
X1.1	TMC/ Management Participation	0.71	
X1.2	TMC/ Vision Deployment	0.76	
X1.3	TMC/ Organization Purpose	0.79	
X1.4	TMC/ Organizations Objectives	0.47	
X1.5	TMC/ Policies Reviews	0.68	
X1.6	TMC/ Performance Indicators	0.80	
X1.7	TMC/ Continuous Improvement	0.66	
X1.8	TMC/ Resources	0.78	
Total Variance explained		50.9 %	
Measures of Sampling Adequacy		0.85	
Bartlett's Test of Sphericity (Approx. Chi-Square)		876.91	
Degree of Freedom		28	
P-value (Sig.)		0.00***	
***P-value		< 0.001	

Table 6-5 shows the results of the factor analysis for the items selected to measure Customer Focus Construct when forced into a single factor and confirms that all the items selected to measure (CF) are statistically valid measures. The loading values for these items are all moderate or higher, and they can collectively explain 59.74 percent of the variance.

Table 6-5: Factor Analysis for (CF) Constructs

Variable	Description	Item Loading	Cronback Alfa
X2	Customer Focus (CF)		0.83
X2.1	CF/ Customer Consideration in strategies	0.75	
X2.2	CF/ Customer Requirements	0.81	
X2.3	CF/ Customer Survey	0.80	
X2.4	CF/ Encouragement of Employees	0.69	
X2.5	CF/ Customer Complaints	0.80	
Total Variance explained		59.74 %	
Measures of Sampling Adequacy		0.78	
Bartlett's Test of Sphericity (Approx. Chi-Square		511.81	
Degree of Freedom		10	
P-value (Sig.)		0.00***	
***P-value		< 0.001	

Table 6-6 shows the results of the factor analysis for the items selected to measure Process Management Construct when forced into a single factor and confirms that all the items selected to measure (PM) are statistically valid measures. The loading values for these items are all moderate or higher, and they can collectively explain 55.62 percent of the variance.

Table 6-6: Factor Analysis for (PM) Constructs

Variable	Description	Item Loading	Cronback Alfa
X3	Process Management (PM)		0.88
X3.1	PM/ Process Measurement	0.73	
X3.2	PM/ Procedures – Instructions	0.81	
X3.3	PM/ Statistical Techniques	0.79	
X3.4	PM/ Reduced Waste	0.72	
X3.5	PM/ Improvement Teams	0.68	
X3.6	PM/ Calibrations	0.80	
X3.7	PM/ Housekeeping	0.66	
X3.8	PM/ Research for Improvement	0.76	
Total Variance explained		55.62 %	
Measures of Sampling Adequacy		0.89	
Bartlett's Test of Sphericity (Approx. Chi-Square		1011.48	
Degree of Freedom		28	
P-value (Sig.)		0.00***	
***P-value		< 0.001	

Table 6-7 shows the results of the factor analysis for the items selected to measure Training & Development when forced into a single factor and confirms that all the items selected to measure (T&D) are statistically valid measures. The loading values for these items are all moderate or higher, and they can collectively explain 60.48 percent of the variance

Table 6-7: Factor analysis for (T&D) Constructs

Variable	Description	Item Loading	Cronback Alfa
X4	Training & Development (T&D)		0.89
X4.1	T&D/ Training Needs	0.72	
X4.2	T&D/ Supervisors' Involvement in Training	0.79	
X4.3	T&D/ Training Resources	0.80	
X4.4	T&D/ Modern Training Methods	0.80	
X4.5	T&D/ On the Job Training	0.84	
X4.6	T&D/ Training Evaluation	0.77	
X4.7	T&D/ Training Records	0.73	

Total Variance explained	60.48 %
Measures of Sampling Adequacy	0.86
Bartlett's Test of Sphericity (Approx. Chi-Square	1028.54
Degree of Freedom	21
P-value (Sig.)	0.00***
***P-value	< 0.001

Table 6-8 shows the results of the factor analysis for the items selected to measure Employee Involvement when forced into a single factor and confirms that all the items selected to measure (EI) are statistically valid measures. The loading values for these items are all moderate or higher, and they can collectively explain 56.32 percent of the variance.

Table 6-8: Factors Analysis for (EI) Constructs

Variable	Description	Item Loading	Cronback Alfa
X5	Employees' Involvement (EI)		0.90
X5.1	EI/ Suggestion System	0.77	
X5.2	EI/ Suggestion Sys. Implementation	0.80	
X5.3	EI/ Encouragement To Report Problems	0.76	
X5.4	EI/ Cross – Functions Teams	0.78	
X5.5	EI/ Activities – communication	0.72	
X5.6	EI/ Working Environment	0.80	
X5.7	EI/ Delegation	0.73	
X5.8	EI/ Employees' Satisfaction Measurements	0.74	
X5.9	EI/ Motivations – Recognitions	0.63	
Total Variance explained			56.32 %
Measures of Sampling Adequacy			0.90
Bartlett's Test of Sphericity (Approx. Chi-Square			1262.23
Degree of Freedom			36
P-value (Sig.)			0.00***
***P-value			< 0.001

Table 6-9 shows the results of the factor analysis for the items selected to measure Quality Data and Measurement when forced into a single factor and confirms that all the items selected to measure (Data) are statistically valid measures. The loading values for these items are all moderate or higher, and they can collectively explain 67.08 percent of the variance.

Table 6-9: Factor Analysis for (Data) Constructs

Variable	Description	Item Loading	Cronback Alfa
X6	Quality Data and Measurement (Data)		0.88
X6.1	Data/ Decisions	0.73	
X6.2	Data/ Performance Measures	0.83	
X6.3	Data/ Comparison with International Indicators	0.83	
X6.4	Data/ Information For Improvement	0.89	
X6.5	Data/ Information Reliability	0.81	
Total Variance explained			67.082 %
Measures of Sampling Adequacy			0.850
Bartlett's Test of Sphericity (Approx. Chi-Square			704.894
Degree of Freedom			10
P-value (Sig.)			000***
***P-value			< 0.001

Table 6-10 shows the results of the factor analysis for the items selected to measure **Supplier Quality Management** when forced into a single factor and confirms that all the items selected to measure (SM) are statistically valid measures. The loading values for these items are all moderate or higher, and they can collectively explain 63.52 percent of the variance.

Table 6-10: Factor analysis for (SM) Constructs

Variable	Description	Item Loading	Cronback Alfa
X7	Supplier Quality Management (SM)		0.86
X7.1	SM/ Selection Basis	0.69	
X7.2	SM/ Relationship	0.84	
X7.3	SM/ Delivery	0.84	
X7.4	SM/ Quality Audit	0.81	
X7.5	SM/ Information Sharing	0.80	

Total Variance explained	63.52 %
Measures of Sampling Adequacy	0.81
Bartlett's Test of Sphericity (Approx. Chi-Square	617.31
Degree of Freedom	10
P-value (Sig.)	0.00***
***P-value	< 0.001

Table 6-11 shows the results of the factor analysis for the items selected to measure **Continuous Improvement Construct** when forced into a single factor and confirms that all the items selected to measure (CI) are statistically valid measures. The loading values for these items are all moderate or higher, and they can collectively explain 70.80 percent of the variance.

Table 6-11: Factor Analysis for (CI) Constructs

Variable	Description	Item Loading	Cronback Alfa
X8	Continuous Improvement (CI)		0.90
X8.1	CI/ Processes Reviewed	0.83	
X8.2	CI/ Quality problems Analysis	0.86	
X8.3	CI/ Benchmarking for Improvement	0.88	
X8.4	CI/ Innovation	0.81	
X8.5	CI/ Quality Culture	0.83	

Total Variance explained	70.80 %
Measures of Sampling Adequacy	0.86
Bartlett's Test of Sphericity (Approx. Chi-Square	810.36
Degree of Freedom	10
P-value (Sig.)	0.00***
***P-value	< 0.001

6.4.3 Correlation Analysis

Correlation is a measure of a relationship or strength between two or more variables or sets of data. Pearson’s Product Moment Coefficient (r) is the most often used and most precise coefficient. It is generally used with continuous variables and expressed in the form of a coefficient with +1.00 indicating a perfect positive correlation; -1.00 indicating a perfect inverse correlation; 0.00 indicating a complete lack of a relationship.

Table 6-12 summarizes the Pearson correlation among the following variables coefficients for all pairs of eight factors TM, CF, PM, T&D, EI, DATA, SM, CI; note that all of the correlations are positive and statistically significant. Top management commitment is highly correlated with customer focus (0.966) and the remaining TQM critical success factors, which supports the emphasis in the literature on the vital role of an organization’s leaders in TQM.

Table 6-12: Total Correlation for TQM CSFs

Factor	TM C	CF	PM	T & D	EI	Data	SM	CI	Tota l
Top Management Commitment (TMC)	1,00								
Customer Focus (CF)	0.97 *	1,00							
Process Management (PM)	0.67 *	0.62 *	1,00 0						
Training and Development (T&D)	0.52 *	0.48 *	0.60 *	1,00					
Employees’ Involvement (EI)	0.56 *	0.53 *	0.51 *	*0.62	1,00				
Quality Data and Measurement (Data)	0.52 *	0.48 *	0.53 *	0.35*	0.69 *	1,00			
Supplier Quality Management (SM)	0.54 *	0.51 *	0.54 *	0.45*	0.51 *	0.60 *	1,00		
Continuous Improvement (CI)	0.60 *	0.56 *	0.56 *	*0.54	0.69 *	0.69 *	0.62 *	1,00	
Total	0.84 *	0.80 *	0.83 *	*0.72	0.78 *	0.78 *	0.74 *	0.81 *	1,00

- correlation significant at 0.05

Ahire *et al.* (1996), examined the correlations among the critical success factors they used to test TQM implementation in manufacturing and noted that correlations among the constructs were positive, indicating that the quality management strategies should be implemented holistically rather than piecemeal. The researcher thinks that implementing the critical success factors holistically is not easy in a traditionally bureaucratic organization, such as in Libyan companies. An organization should be basically healthy before beginning TQM implementation.

6.5 Descriptive Analysis

Descriptive analysis is used to identify and summarize variables, either graphically or numerically and limits generalizations or conclusions, based on statistical analysis, to the particular group of individuals or cases observed. Techniques include simple univariate measures of dispersion and central tendency, such as means, medians, standard deviations, and percentiles of the variables. These analyses can also produce bivariate information describing the relationship between variables, such as regression prediction equations or correlation coefficients.

6.5.1 General Characteristics of the Sample

The primary purpose of this section is to describe the participants in this study who completed the survey with respect to the following demographic variables: (a) job title, (b) level of education, (c) years of experience in current/similar job and (d) years of experience with quality practices.

The descriptive information, which involved simple descriptive statistics, frequencies, measures of central tendency and measures of dispersion, is presented in the following figures and tables.

6.5.1.1 Job Title (position)

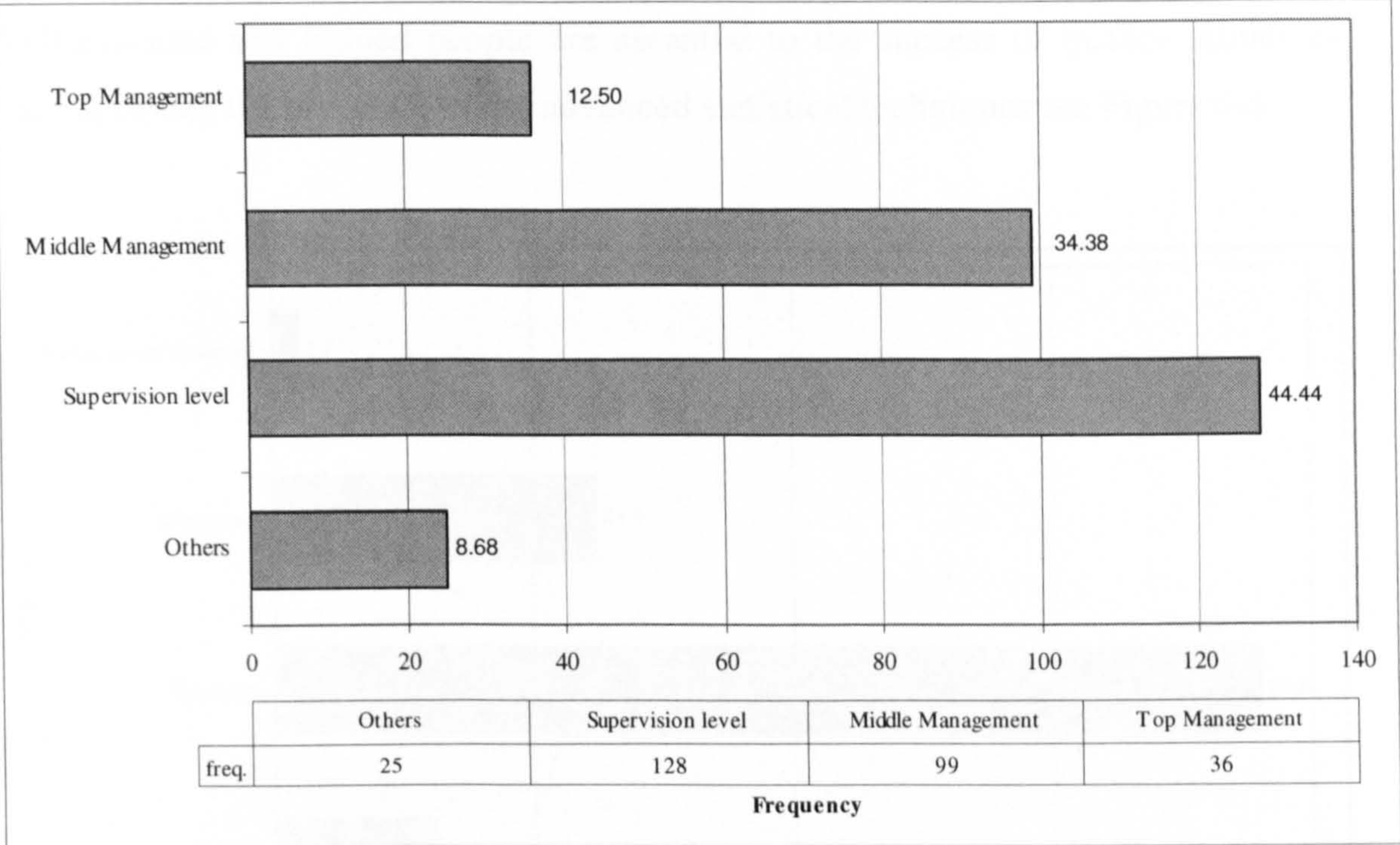


Figure 6-3: Sample Distribution (Job Title)

Figure 6-3 shows the different employees categories from the manufacturing sector that participated in the survey, with a high participation (78.82%) from the supervisory level. This group represents the line managers, middle and junior managers (the policy operators and policy participants) who can judge the quality initiatives in their organization and the extent to which they consider them to be successful or not. Also the sample shows fair participation from top management (12.50%), representing the policy designers; this meant the study could seek their opinion about the strategies, policies deployment, motivations and support.

Figure 6-3 also shows (8.68%) of the sample representing other categories who participate in daily activities to implement the process of improvement (engineers, trainers and senior technicians). The role of supervisors is critical for successful TQM implementation (Dale and Lees, 1985). They work with co-workers more closely to solve quality problems. An encouraging and supporting environment must be created for them to react with quality improvements programs and lead their subordinates to execute the quality plans.

6.5.1.2 Level of Education

Well-educated and trained people are essential to the success of quality initiatives and improving the processes using advanced statistical techniques see Figure 6-4.

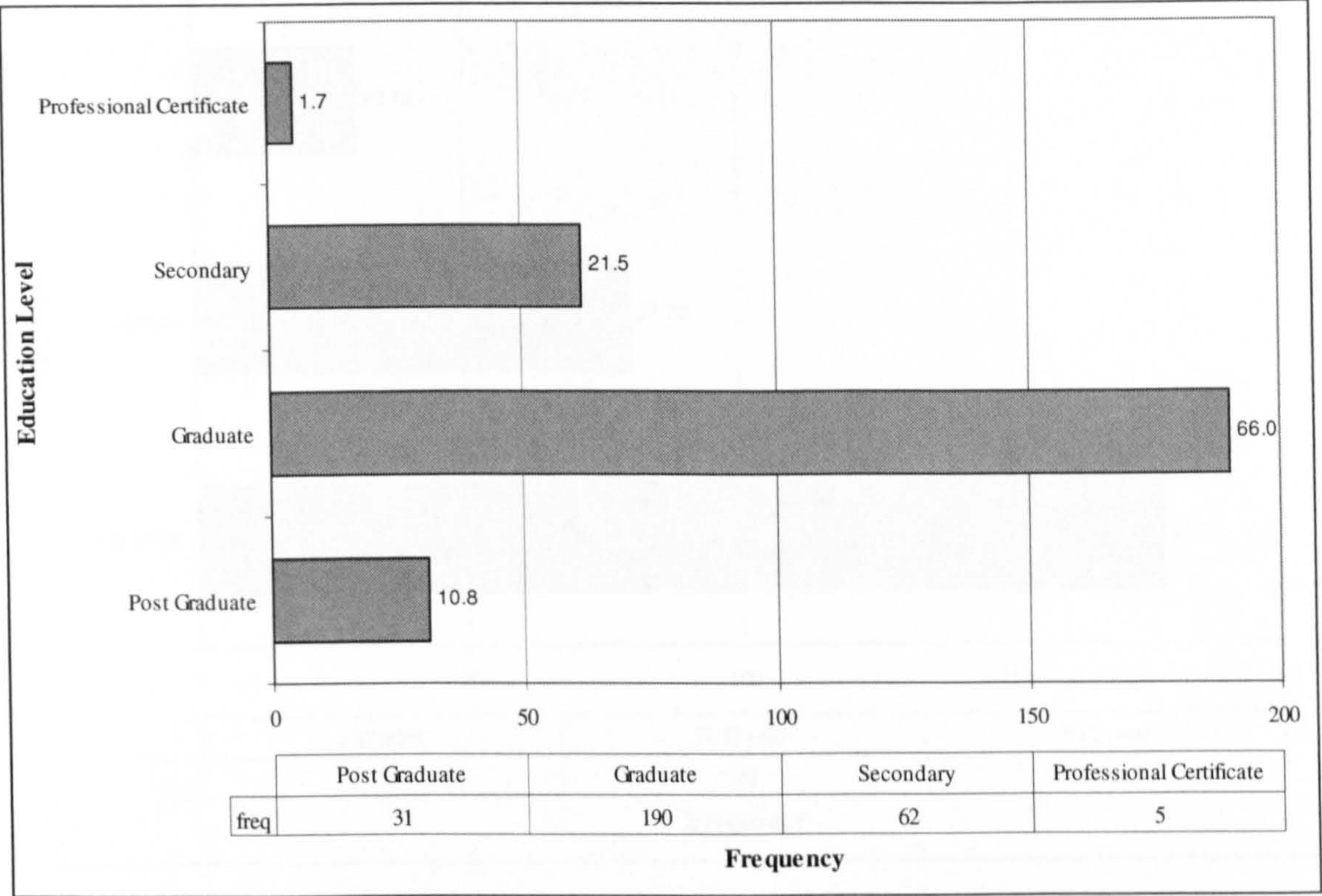


Figure 6-4: Sample Distribution (Level of Education)

The educational level of the respondents was classified into four categories: (1) professional certificate (1.7%), (2) secondary school certificate (21.5%), graduate (66%), post graduate (10.8%), with the majority of the respondents (66%) having the minimum educational qualification of a bachelor degree. It was felt that this would enable them to understand and participate in the completion of the questionnaire. TQM implementation requires all levels of employees to be educated, well trained and able to analyze information and solve the problems that arise at work. Graduate employees are usually more eager to climb the ladder of success than other employees with lower education levels. Today Libyan manufacturing organizations require a bachelor’s degree as the baseline for responsible higher supervisory positions.

The data above shows that Libyan organizations have a well educated workforce who, if well trained and motivated, can positively participate in the quality movement of Libyan manufacturing .

6.5.1.3 Years of Experience

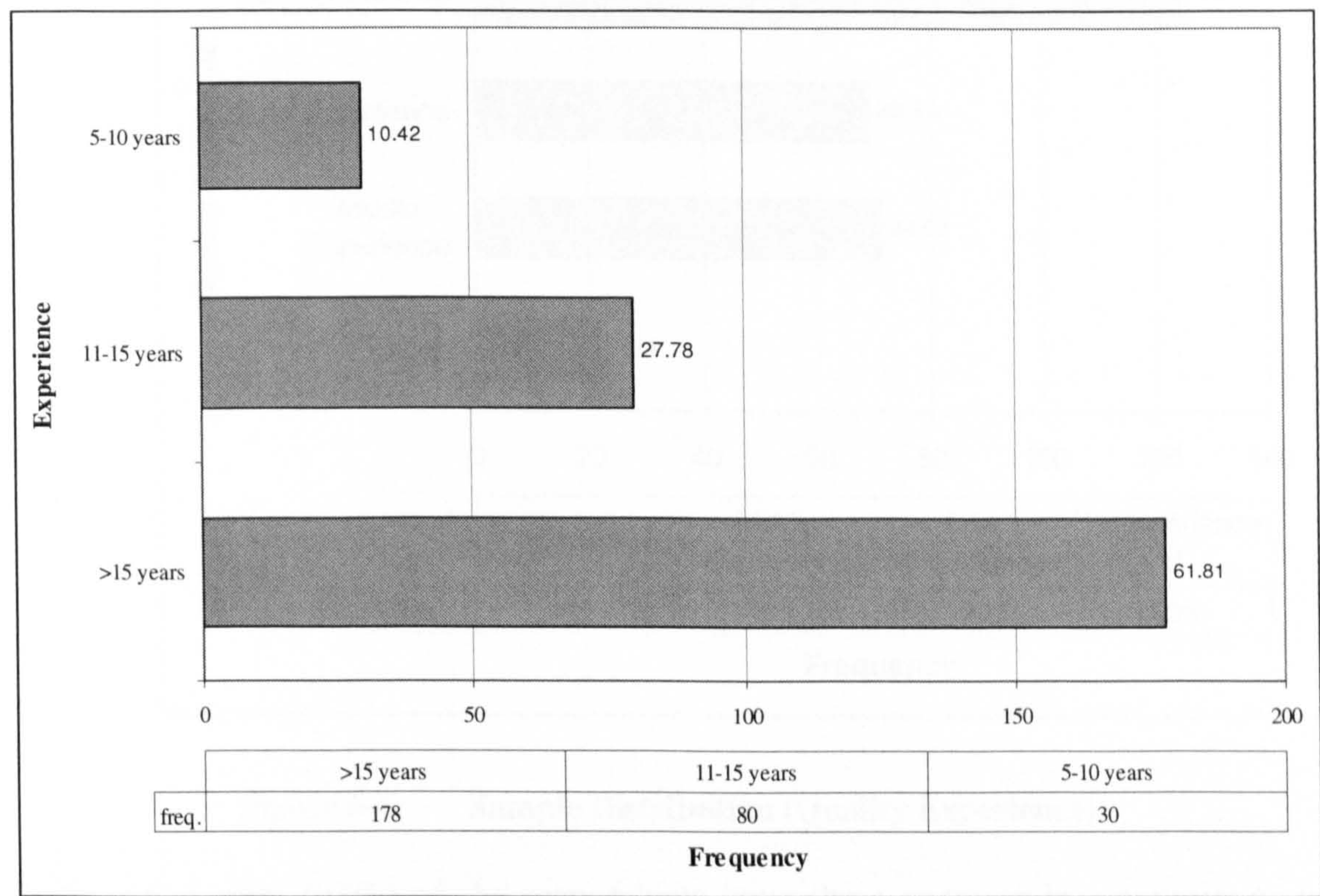


Figure 6-5: Sample Distribution (Years of Experience)

The years of practical experience of the respondents in different disciplines were divided into three categories: (1) 5-10 years (30 respondents 10.42%), (2) 11-15 years (80 respondents 27.78%), (3) > 15 years (178 respondents 61.81 %). Figure 6-5.

A longer period of continued employment means more experience and more exposure to the employment environment. Individuals with a longer period of full-time employment should have mastered one or more jobs and be ready to participate in quality improvement if they are prepared for change. It could be the opposite if they are neglected (Huber et al., 1993).

Table 6-5 shows that nearly 62% of the respondents have more than 15 years experience in their organizations, enabling them to provide the researcher with sufficient and accurate information and to be able to judge the level of quality management in their organization.

6.5.1.4 Experience in Quality Field

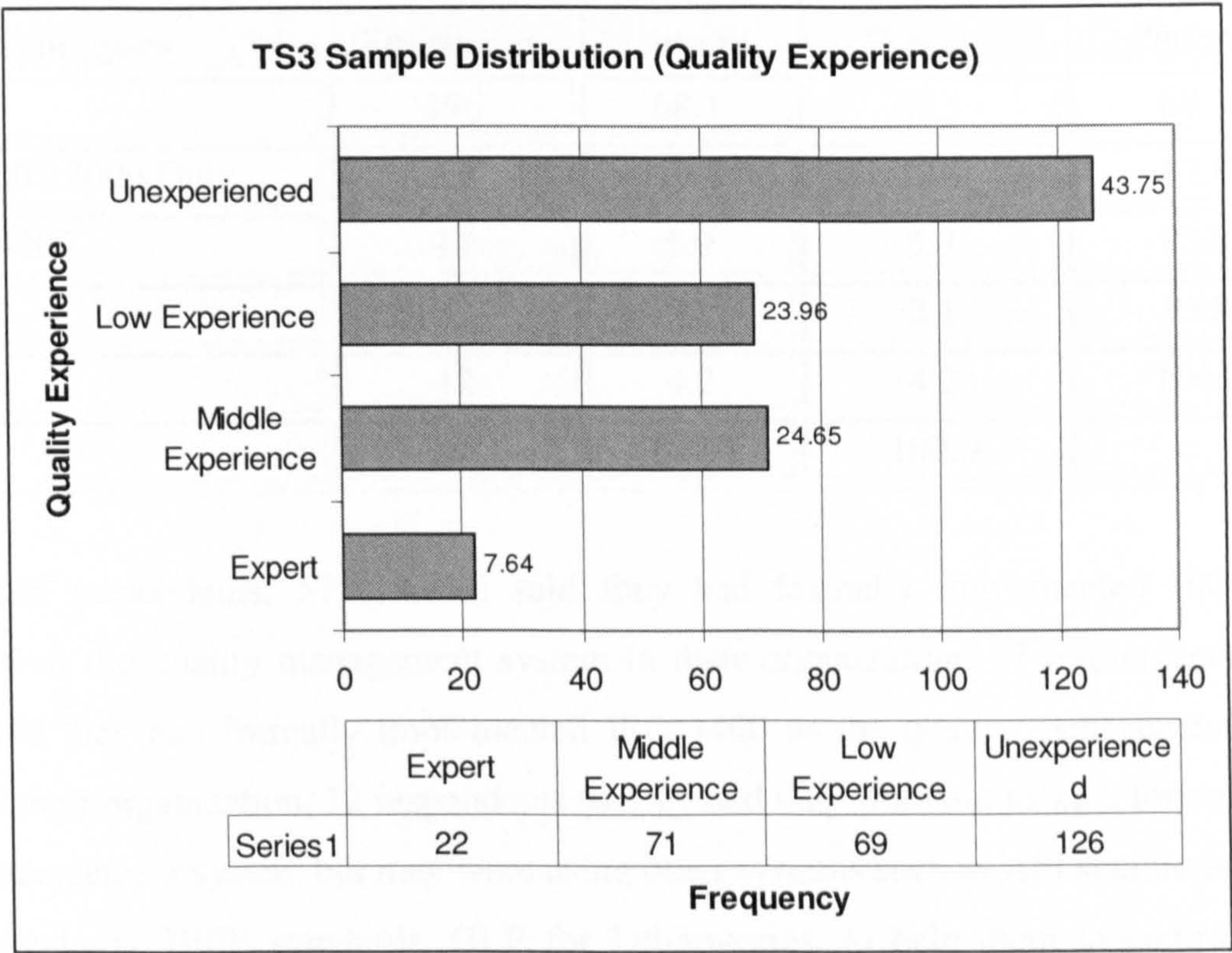


Figure 6-6: Sample Distribution (Quality Experience)

Sixty-one percent (61%) of the respondents have three years or less experience in quality management which indicated that the quality movement has just started in the Libyan companies, i.e. after the country opened up for international competition. This forced some of the local industry to move towards quality in order to compete with the new market pressures. Libyan organizations have only recently begun to implement quality management systems (the first company was certified in 2000) so it may still be too early to see a high level of awareness or recognition of all their results or benefits.

6.6 Quality practices

6.6.1 Quality Practices in Libyan Companies

Before investigating the level TQM of implementation, we should know what quality management approaches were implemented in Libyan organizations. This was investigated by asking the question: **What quality management technique is mostly used in your organization?** (Table 6-13).

Table 6-13: Quality Management Approach Implemented

Techniques		Frequency	Percent	Valid Percent	Cumulative Percent
	None	196	68.1	68.1	68.1
	ISO 9001:2000 Only	57	19.8	19.8	87.8
	ISO 14000	17	5.9	5.9	93.8
	TQM	6	2.1	2.1	95.8
	Others	12	4.2	4.2	100.0
	Total	288	100.0	100.0	

Of the 288 respondents, 57 (19.8%) said they had formally implemented ISO 9000:2000 as the quality management system in their organization; 17 respondents (5.9%) said they had formally implemented ISO 1400 as the quality management system in their organization, 12 respondents (4.2%) said they were not using a formal quality management system but they were using other systems such as API standards, ASTM standards, IEEE standards, GLP for Laboratories, to help them to control quality in some units but not for the whole organization; Six respondents (2.1%) reported that they were at the preparation stage for the implementation of the TQM process.

Quality management systems, or ISO 9000 implementation, in Libya started late compared with other developing countries in the Middle East such as UEA, Saudi Arabia and Turkey. The first Libyan company was certified in the year 2000. Most of the certified companies went after registration due to external pressures (customer, market, legal,) not for improvement purposes. It was easy to see that there was not much improvement, beyond better documentation and a reduction of customer complaints, in the internal systems of certified companies. Most of the Libyan organizations relaxed after becoming registered, waiting for the next external review after one year. This is consistent with Zairi (1996) who noted that the organizations in Arab countries think that ISO 9000 registration is a destination that, when reached, will solve the whole performance problem and lead to superior competitiveness. He stated that: *“ISO 9000 is only a licence to practice and only represents one pillar of the TQM philosophy. It is an essential element but not sufficient on its own”* (Zairi, 1996)

The researcher noticed that most of employees and management in Libyan organizations are enthusiastic about quality improvement and they have enough resources to go ahead, but the top management in most of the organizations are giving the support and participation needed only during the implementation stage. They lack the knowledge and the know-how to implement quality initiatives and unfortunately they do not attend any training awareness sessions – as was pointed out by many interviewees. This is consistent with Wong (1998) who highlighted that the main reason for the failure of TQM implementation is due to a lack of real understanding of the quality principles and a lack of training especially among top management. The researcher also noticed that there was no pressure from the government and the impact of the customer is very weak.

6.6.2 The level of implementation for quality practices

The level of implementation of quality practices was the focus of this survey. Table 6-14, shows that all eight factors have a mean range from 3.33 to 4.2 on a 10 point Likert scale. Process design and control gave the highest overall mean rating of (4.24), and it is the only factor that reached the middle level of implementation on the 1-10 scale with quality data and measurement, (3.37) being the lowest. Other factors that scored in the low range of implementation were top management commitment (3.43), customer satisfaction (3.55), training and development (3.77), employee participation and involvement (3.77), supplier management (3.86), and continuous improvement (3.57).

The overall mean of the eight critical success factors achieved was 3.69 with a low standard deviation of 0.62. According to Black and Porter (1996) the level of TQM implementation in an organization is derived from the ratings or scores of the items in the assessment instrument. For each TQM construct, the actual level of practice is represented by the average of the item scores for that construct. A vector of the averages for all the constructs, 3.69 represents the overall level of TQM implementation for the organization as a whole (Black and Porter, 1996). Since the rating scale used ranged from 1-10, then the average score fell within the low level of TQM implementation which is a much lower than the level of quality management practices when compared to other studies (Quazi and Padibjo, 1998). This could

indicate that the companies could be still struggling to implement TQM successfully.
 Table 6-14 shows a summary of the mean score of each item in the questionnaire.

Table 6-14: The Level of Implementation For TQM , CSFs

Factor	Item no.	Mean	S. D	Overall mean
X1: Top Management Commitment (TMC)	X1.1: TMC/ Management Participation	3.99	2.18	3.43
	X1.2: TMC/ Vision Deployment	3.69	1.91	
	X1.3: TMC/ Organization Purpose	3.70	2.05	
	X1.4: TMC/ Organizations Objectives	2.93	1.43	
	X1.5: TMC/ Policies Reviews	2.93	1.77	
	X1.6: TMC/ Performance Indicators	3.39	1.88	
	X1.7: TMC/ Continuous Improvement	3.60	1.94	
	X1.8: TMC/ Resources	3.15	1.75	
X2: Customer Focus (CF)	X2.1: CF/ Customer Consideration in strategies	3.99	2.18	3.55
	X2.2: CF/ Customer Requirements	3.69	1.91	
	X2.3: CF/ Customer Survey	3.70	2.05	
	X2.4: CF/ Encouragement of Employees	2.93	1.77	
	X2.5: CF/ Customer Complaints	3.39	1.88	
X3: Process Management (PM)	X3.1: PM/ Process Measurement	3.84	1.866	4.24
	X3.2: PM/ Procedures – Instructions	4.29	1.829	
	X3.3: PM/ Statistical Techniques	3.88	1.917	
	X3.4: PM/ Reduce Waste	3.89	2.105	
	X3.5: PM/ Improvement Teams	3.60	1.848	
	X3.6: PM/ Calibrations	4.40	2.065	
	X3.7: PM/ Housekeeping	4.88	1.994	
	X3.8: PM/ Research for Improvement	4.88	2.012	
X4: Training & Development (T & D)	X4.1: T&D/ Training Needs	3.78	1.93	3.77
	X4.2: T&D/ Supervisors’ Involvement in Training	3.72	1.84	
	X4.3: T&D/ Training Resources	4.16	1.85	
	X4.4: T&D/ Modern Training Methods	4.01	1.84	
	X4.5: T&D/ On the Job Training	3.57	1.87	
	X4.6: T&D/ Training Evaluation	3.77	2.01	
	X4.7: T&D/ Training Records	3.39	1.97	

Factor	Item no.	Mean	S. D	Overall Mean
X5: Employees Participations and Involvements (EI)	X5.1: EI/ Suggestion System	3.10	1.72	3.39
	X5.2: EI/ Suggestion Sys. Implementation	2.77	1.54	
	X5.3: EI/ Encouragement To Report Problems	3.11	1.81	
	X5.4: EI/ Cross – Functions Teams	3.04	1.83	
	X5.5: EI/ Activities – communication	3.74	1.93	
	X5.6: EI/ Working Environment	3.86	1.84	
	X5.7: EI/ Delegation	3.62	1.76	
	X5.8: EI/ Employees Satisfaction Measurements	3.66	1.90	
	X5.9: EI/ Motivations – Recognitions	3.60	1.70	
X6: Quality Data and Measurement (Data)	X6.1: Data/ Decisions	3.33	1.59	3.37
	X6.2: Data/ Performance Measures	3.51	1.79	
	X6.3: Data/ Comparison with International Indications	3.38	1.70	
	X6.4: Data/ Information For Improvement	3.37	1.62	
	X6.5: Data/ Information Reliability	3.30	1.72	
X7: Supplier Quality Management (SM)	X7.1: SM/ Selection Basis	4.09	2.04	3.86
	X7.2: SM/ Relationship	4.04	1.95	
	X7.3: SM/ Delivery	4.12	2.03	
	X7.4: SM/ Quality Audit	3.74	1.98	
	X7.5: SM/ Information Sharing	3.32	1.85	
X8: Continuous Improvement (CI)	X8.1: CI/ Processes Reviewed	3.99	1.72	3.57
	X8.2: CI/ Quality problems Analysis	3.41	1.79	
	X8.3: CI/ Benchmarking for Improvement	3.69	1.72	
	X8.4: CI/ Innovation	3.54	1.79	
	X8.5: CI/ Quality Culture	3.22	1.68	

Further analysis was also carried out to achieve a better understanding of the level of TQM implementation among Libyan manufacturing organizations and to answer the main research question (4). During the survey design, the response scale was divided into three levels: low score of (1 to 4), medium (4 to < 7), high (7 to 10), to enable

the respondents to estimate the level of implementation of each of the eight factors. Table (6-15) shows the responses distribution according to above scale.

Table 6-15: TQM implementation level in LPMC

Factors	Mean score	S.D	Percentage Distribution of Mean Score		
			High 7 – 10	Medium 4 -< 7	Low 1 -< 4
X1: Top Management Commitment	3.43	1.35	0.7	29.3	69.8
X2: Customer Focus	3.55	1.56	2.1	30.9	67.0
X3: Process Control & Design	4.24	1.48	4.2	51.2	44.6
X4: Training & Development	3.77	1.48	1.0	39.9	59.0
X5: Employees’ Participations and Involvements	3.39	1.33	0.0	34.4	65.6
X6: Quality Data and Measurement	3.37	1.39	0.0	34.1	65.9
X7: Supplier Quality Management	3.86	1.57	2.1	42.7	55.2
X8: Continuous Improvement	3.57	1.47	0.4	31.1	68.6

The findings from table 6-15 revealed a fairly low level of TQM implementation among the Libyan manufacturing organizations. This is not surprising as the organizations covered in this study were only introduced to quality management systems (only ISO 9000) in 2000 and were without clear long-term plans or adequate preparation of the environment for new quality approaches which demanded a lot of changes in the ways of approaching business.

Rao et al. (1997) pointed out that the stages of development of a country in different ways (education, regulations, infrastructures) and the length of quality program implementation could affect the TQM implementation in any organization.

6.6.3 Test of significance on the difference of means

Of the 288, 55 respondent participants (19.4%) said that they have ISO 9000 in place and their organizations are certified for ISO 9000:2000. A significance test was carried out to investigate whether there are any significant differences between ISO and non-ISO companies in implementing CSFs. In order to conduct the tests, the following hypotheses were set up:

H0 : there is no significant difference between the practices of ISO 9000 and non-ISO 9000 companies in implementing TQM critical success factors.

H1 : there is a significant difference between the practices of ISO 9000 and non-ISO 9000 organizations in implementing TQM critical success factors. Table 6-16 presents the results of the independent samples t-test conducted on the two groups (ISO and non-ISO companies) to investigate whether the differences are statistically significant.

Table 6-16: T-test for ISO and non-ISO Organizations

Factors	Company	Means	SD	T value	p
Top Management Commitment (TMC)	ISO	3.54	1.33	2.05	0.04*
	Non-ISO	3.22	1.34		
Customer Focus (CF)	ISO	3.72	1.52	2.19	0.02*
	Non-ISO	3.32	1.50		
Process Management (PM)	ISO	4.26	1.46	1.16	0.24
	Non-ISO	4.06	1.46		
Training and Development (T & D)	ISO	3.66	1.43	1.01	0.31
	Non-ISO	3.84	1.52		
Employees' Participation and Involvement (EI)	ISO	3.61	1.30	3.08	0.002*
	Non-ISO	3.14	1.32		
Quality Data and Measurement (Data)	ISO	3.80	1.22	5.44	0.001*
	Non-ISO	2.94	1.42		
Supplier Quality Management (SM)	ISO	4.17	1.51	3.38	0.001*
	Non-ISO	3.55	1.56		
Continuous Improvement (CI)	ISO	3.82	1.43	2.77	0.006*
	Non-ISO	3.34	1.45		

- significant at level 0.05

From table 6-16, the evaluation of the statistical significance between the ISO and non-ISO organizations shows that there is a slight significant difference in most of the CSFs (TMC, CF, EI, Data, SM, CI) in favour of ISO organizations. This means that these organizations, once they are registered, should see some improvement in their management systems, decision making, processes, suppliers’ partnership, and internal and external customer satisfaction.

None of the Libyan organizations interviewed introduced ISO 9000 to their organization as a way to improve processes, customer satisfaction or employees’ involvement. All were concerned with ISO certification only for marketing purposes

or under pressure from external clients. This is consistent with some other surveys from around the world (Frost and Jones, 1994; Wenmoth and Dobbin, 1994), which revealed that external pressure was one of the major elements for implementing ISO 9000 and seeking certification. These include:

- Customer pressure for better quality, price, delivery
- Competitors' pressure
- Desire to gain more market share

Other international studies (Rao et al., 1997; Sun, 1999), found that organizations with ISO 9000 registration have better quality improvement and results than those not registered for ISO 9000. From the quantitative analysis above it was clear that the TQM critical success factors which have been chosen to investigate the level of TQM implementation in Libyan manufacturing organizations were not well established and the organizations are still struggling to find the right path to implement TQM and benefit from its impact on performance and competitiveness. The second phase of this study was conducted to find out why the Libyan organizations are struggling to implement their quality initiatives and what difficulties and barriers they are facing.

6.7 Summary

The participants of the survey provided responses about the level of quality programs implementation as they currently exist. Data were then cleaned, coded and entered into a preset SPSS (Statistical Package for Social Scientists) (11.5), and a series of analyses were carried out to test instrument reliability and validity. Internal consistency was measured by calculating a statistic known as Cronbach's coefficient alpha; a correlation coefficient was used to indicate the strength of association between critical success factors. Descriptive statistics described sample distributions and data in terms of measures of central tendency and measures of dispersion. The t-test was used to determine whether there were significant differences between the means of ISO and non-ISO organizations, to see if real improvement resulted from implementing ISO 9000.

The next chapter, Chapter (7) will present the results of the study for qualitative data.

The purpose of this chapter is to provide results from semi-structured interviews conducted by the researcher within Libyan and UAE companies to support the overall results of the quantitative analysis and add further dimensions to those results obtained in the analysis of the quantitative data.

Chapter 7

7 Qualitative Analysis

7.1 Introduction

Qualitative data consist of detailed descriptions of situations, events, interactions, direct quotations from individuals about their experiences, attitudes, beliefs, thoughts and excerpts or entire passages from documents, correspondence, records and case histories. Qualitative data are collected as open-ended narrative without predetermined or standardized categories. Qualitative analysis examines multiple groups to identify common themes that, having cross-confirmation, take on a greater significance. Qualitative data for this study came from semi structured interviews, with Libyan and UAE managers. The process for systematically analyzing the qualitative data collected as part of this study is summarized in the steps below.

In this chapter, section 7.2 is a description of how qualitative data were collected and analyzed. It also shows the Libyan and UAE companies' characteristics and provides feedback from the Libyan and UAE interviewees about their TQM experiences.

Sections 7.3 and 7.4 describe the barriers facing Libyan and UAE companies in their quality journey. Section 7.5 summarizes the whole chapter.

7.2 Survey Interviews

7.2.1 Semi-structured interviews

The results from the survey questionnaire showed a low level of all of the TQM implementation critical success factors (Table 6-15). To find out why there were difficulties and barriers facing Libyan companies to improve their quality standards. Ten managers from five UAE manufacturing companies (Table 7-1) and ten ISO 9000:2000 certified Libyan manufacturing companies managers (Table 7-2) were interviewed to compare the practices of quality management in both countries. The organizations selected from UAE are relatively recent winners of the Dubai Quality Award and are high performing organizations worthy of study as a model of best practice in the field of quality management implementation. Tables 7-1 and 7-2 show the UAE and Libyan companies' interview characteristics.

Why the Semi-structured Interview?

Semi-structured interviews provide greater scope for discussion and learning about the problems, opinions and views of the respondents (section 5.8.3.2.) While there were some fairly specific questions (closed questions) in the interview schedule many were completely open-ended. The interviews were pilot-tested with the first two respondents from the Libyan and UAE companies to see the interaction with interviewees and to check the timing of the interview so it could be refined if necessary and be made more valid and reliable.

Table 7-1: UAE Companies Characteristics

Company	Sector	Employees Number	Start quality initiatives	Quality techniques	Achievement
Company A Established 1979	Manufacturing	3000	1992 (Management by Objective) Performance enhancement program	Certification: ISO 9000:2000; ISO 1400; ISO, 18001; Continuous Improvement Teams; Suggestion scheme; SPC; Six Sigma	Entirely in-house development; Involvement of employees at all levels. Recognition of the employees; Higher levels of Emiritization. Has developed a very sophisticated Quality Management system. The system has evolved over a period of 20 years, and is continuously adopted to the needs of the organization. Dubai Aluminium Company has posted a 40 per cent increase in profits for 2004 over 2003
Company B Established in 1979	Manufacturing	2400	1995 100% training in Quality Basics	Certification: ISO 90001:2000, ISO 14000. ISO 8001. Six Sigma, Kaizen, QFD, fishbone Diagram, Pareto, 5S, Key Performance Indicators.	Won Dubai Quality Award (1994) and Dubai Quality Gold Award (1998); (2004). First manufacturing company in the Middle East to obtain the ISO 14001, ISO8001 by implementing Six Sigma we saved around 2milions US\$ this year. Company B referred to as "The University of Quality Improvement in the Gulf region".
Company C Established in 1975	Manufacturing	1200	1999	Certification: ISO 90001:2000; ISO 14000, self assessment (DQA)	Achieved ISO 9002:1994 certification in 1999; Achieved ISO 2001:2000 Certification in 2002; won Prestigious DQA 2003 Greater employee Involvement and Focus

Following from Table: 7-1

Company	Sector	Employees Number	Start quality initiatives	Quality techniques	Achievement
Company D Established 1972	Manufacturing	520	ISO 9000/2000 ISO 14000	Certification: ISO 9001/2000, ISO 14001,	Won DQA 2003 Improved client focus from ALL staff
Company E	Manufacturing	400	Measurement, Theory Of Constraint (TOC)		Leadership demonstrated at all levels within the company. Commitment and participation by staff in the development of improvement goals and strategies;

Table 7-2: Libyan Companies Characteristics

Company	Sector	Employees Number	Start quality initiatives	Quality techniques	Achievement
Company (1) Established 1977	Manufacturing	3300	2002	ISO 9001, ISO 14000, ISO 1800, ASME , API	Quality awareness increased Better documentation, High product standards recognised by international market
Company (2) Established 1991	Manufacturing	6000	2001	IOSO 9000, ISO17025, ISO 14000, ASTM, Just start designing employee suggestion system	Productivity increased, Better motivations, better moral, Better working environment, gained International quality awards
Company (3) Established 1976	Manufacturing	1200	2000	ISO 9000/2000,	First company certified for ISO 9000 Gained international market reputation and awards
Company (4) 1971	Manufacturing	1800	2003	ISO 9000 ASTM , API, Just starting awareness for quality management systems, forming Quality improvement teams	Few Improvement Projects Quality awareness increased, Developing new policies
Company (5)	Manufacturing	1100	2001	LGP, ISO 17025	High product standard Good Documentation Fewer wastes.

7.2.2 Qualitative Data Analysis

There are a variety of established procedures for analyzing qualitative data (Miles and Huberman, 1994). Generally, these procedures involve converting raw narrative data (interview notes, audiotapes) into partially processed data (transcripts) which are then coded and subjected to one of a number of analysis schemes (e.g., key theme analysis, contents comparative (Yin, 2002). Content analysis is also a powerful data reduction technique for compressing many words of text into fewer content categories based on explicit rules of coding (Gao, 1996).

The qualitative interviews started by using the findings obtained through the quantitative analysis of the first phase questionnaire as a starting point from which to design the interview guide, using the Critical Success Factors (CSF's) as anchor themes to be investigated or added to from the interviews in both the Libyan and UAE organizations.

The analysis required the researcher to be familiar with the data collected by listening to tapes, reading transcripts, studying notes and so on, in order to identify all the key issues, concepts, and themes by which the data could be examined, referenced and rearranged according to the appropriate part of the thematic framework to which they related, and to find associations between themes with a view to provide explanations for the findings, which would be compared with the findings from the quantitative analysis. The outcome of the qualitative analysis, supported by quotations from participants, was used with outcomes from the quantitative analysis to form the big picture of the Libyan context.

Qualitative data analysis is more subjective than quantitative data, is anecdotal and relies heavily on the researcher's knowledge and experience to identify patterns, extract themes and interpretation of findings (Weber, 1990).

The interview analysis for this study revealed that qualitative analysis supported the results gained from the quantitative analysis and explained why there was a clear lack of implementation of the critical success factors of TQM, and the problems that

Libyan organizations faced and still face. The following factors were analyzed and compared with the quantitative findings

7.2.3 Factor (1) - Top Management Commitment (TMC)

Libyan Companies

Top Management Commitment (TMC) is the first critical success factor chosen to measure how well the leaders and top management committed themselves to support the implementation of TQM initiatives, such as vision and value deployment, employees’ involvement and empowerment, customer focus and resources. Without management commitment any efforts to establish improvement will be a waste of time and resources, and lead to the destruction of morale. Eight items were investigated and analyzed and summary statistics for each question are provided in Table 7-3.

Table 7-3: Mean and SD of (TMC) Factor

Factor	Item no.	Mean	SD	Overall mean
X1: Top Management Commitment (TMC)	X1.1: TMC/ Management Participation	3.99	2.18	3.43
	X1.2: TMC/ Vision Deployment	3.69	1.91	
	X1.3: TMC/ Organization Purpose	3.70	2.05	
	X1.4: TMC/ Organizations’ Objectives	2.93	1.43	
	X1.5: TMC/ Policies Reviews	2.93	1.77	
	X1.6: TMC/ Performance Indicators	3.39	1.88	
	X1.7: TMC/ Continuous Improvement	3.60	1.94	
	X1.8: TMC/ Resources	3.15	1.75	

Descriptive analysis of the Top Management Commitment (TMC) factor shows that the grand mean of this factor is 3.43 on the ten-point Likert Scale. This indicates a low level for the factor which was a result of the low levels of its components. Management participation in planning quality strategies is (3.99), vision and mission deployment (3.69), low level of organization purpose (3.7), low level of policies reviews (2.93), and low level of resources assigned to quality programs (3.15).

The qualitative analysis of the interviews with the Libyan managers supported the data gained from the quantitative analysis, Table 7-3. All quantitative and qualitative results confirmed that TQM has not been successfully implemented in the Libyan environment mainly because TMC and understanding of the quality approach has been inadequate and lacks people-involvement in process improvement. This indicated that most of the Libyan manufacturing companies were still running with a traditional, bureaucratic management style as reflected in the comments of one individual who stated:

“I think in this organization and maybe in all other organizations no one knows where we are going, if they do, they haven’t told us.”

During the interviews, none of the Libyan Companies could prove that they had a clear vision statement, most answers were similar to the following:

“We do what they want us to do, we just run our plants according to the production capacity.”

Another respondent also said:

“Top management does not participate in the quality management activities. They never have the ability to communicate the vision of the organization to all levels. Management are trapped in their offices, they always have their own agenda which is always irrelevant to our daily activities.”

One of the interviewed Libyan experts in the field of quality management said:

“I believe that the cause of Libyan organizations’ poor performance is the failure of Libyan managers to realize that there is a different way to manage their organization – a way that yields better quality, higher productivity, more jobs and ability to survive the competition.,”

“There is no enthusiasm for learning and development, especially amongst senior management who lead by poor example, we tried so many times to arrange awareness courses for them but they are never there, they are always busy with lots of meetings.”

The majority of managers at Libyan Manufacturing Companies (LMC) stated during the pilot study and during the interviews that they did not understand what was really meant by vision, empowerment internal customer or Statistical Process Control (SPC). This indicated that there was little awareness of TQM principles especially at high management level.

Top management should be the first to attend quality awareness programs and learn more about management philosophy, techniques and tools. Without sufficient knowledge, planning, preparation, vision and policy deployment, commitment and support, top management are not likely to perform their roles in leading their organizations towards TQM implementation. Time spent in education is never wasted.

Vision provides “constancy of purpose”. It eliminates confusion about the future of the organization and builds confidence in employees that their leaders are thinking long term which can reduce uncertainty and fear (Deming, 1986).

The TQM journey requires patience and discipline, because it deals fundamentally with improvement. Unfortunately, Libyan companies only fire fight to keep the ‘As Is’ situation. With such a style of management they are unlikely to be enthusiastic towards TQM, or any sort of improvement. Libyan managers pay very little attention to strategic planning and they focus mainly on those urgent matters that appear while performing the job. The quality effort in each organization reflects the style of its leader.

The first step for Libyan management is to admit that what they have learned in the past and what they are doing in the present will not change the bad shape they are in. They have to learn new approaches of modern management and they should benefit from other developing countries’ experience, such as Dubai, Malaysia, Turkey and Singapore, and adopt what has proved to be successful there. As one of the Libyan quality experts mentioned below:

“We should admit that the way we were managing our organizations for the last 20 years is just accumulative wrong thinking and doing and gets us nowhere. We should stop, think and start again. We should learn from others, and move faster; faster and fasterwe are far behind.”

“A company can’t buy its way into quality it must be led into quality by top management.” Deming (1986).

According to Gill (2003), “Leadership must take the organization on a journey from its current state to a desired future state and deal with all the problems that arise along the journey.”

UAE Manager’s Opinions (Top Management Commitment)

UAE managers have shown a different picture from the Libyan managers. Most of the interviewees confirmed that quality management programs, such as TQM, Six Sigma and ISO 9000 standards, are very popular in UAE manufacturing organizations. By implementing these programs UAE manufacturers have improved their quality management and their competitive edge.

All interviewees from the UAE organizations (Dubai quality award winners) emphasized that TQM implementation cannot be successful without the active participation of the employees and support of their top management. It was obvious that quality initiatives in these organizations were fully supported and led by top management, according to the interviewed manager’s quotations below.

“Our top management actively participates in quality management and improvement process. Quality issues always represent a very hot subject in top management meetings. Company (A)

“The move from a traditional management philosophy to a Total Quality Management culture demands much from an organization, it is not easy, it needs a very strong commitment from the top management, so it is non-stop effort.” Company (C)

“None of this would have been possible without top management commitment, as I mentioned before the managing Director was following the activity of quality programs day by day until the quality became a daily routine in the company.” Company (E)

“Our General Manager conducted sessions on strategical planning and quality initiatives to inform and educate all managers and process owners and to achieve a common understanding of the strategic planning process. The managers and process owners discussed the data presented by leaders and strategic options were discussed again at all levels. This exercise has been very beneficial in terms of introducing strategic thinking at all levels and has been valuable in developing future leaders.” Company (E)

It is clear from the qualitative analysis of UAE organizations that the top management in these organizations was very much involved in introducing quality initiatives to their organizations through clear vision and consistent support during the whole journey of implementation and improvement to reach a high level of quality maturity leading to the Dubai Quality Award.

Top management commitment has been found to be the most critical factor in any effort aimed at changing the operational philosophy of the organization. It appeared as criteria number one in most, if not all, of TQM awards (Dubai Quality Award, 2004). Most quality professionals and practitioners agree that leadership is the single most important factor influencing the successful application of quality management principles (Ahire et al., 1996; Black and Porter, 1996; Flynn et al., 1994; Powell, 1995; Saraph et al., 1989; Zeitz et al., 1997). Without the support of top management, the attitude and behaviour of the members of the organization is unlikely to change (Cole et al., 1993; Kennerfalk and Klefsjo, 1995).

Leadership Criteria (Dubai Quality Award)

“Excellent Leaders develop and facilitate the achievement of the mission and vision. They develop organizational values and systems required for sustainable success and implement these via their actions and behaviours. During periods of change they retain a constancy of purpose. Where required, such leaders are able to change the direction of the organization and inspire others to follow.” (Department of Economic Development, 2004)

- 1a. Leaders develop the mission, vision, values and ethics and are role models of a culture of excellence
- 1b. Leaders are personally involved in ensuring the organization's management system is developed, implemented and continuously improved
- 1c. Leaders interact with customers, partners and representatives of society
- 1d. Leaders reinforce a culture of excellence with organisation's people
- 1e. Leaders identify and champion organizational change

7.2.4 Factor (2) - Customer Focus (CF)

Libyan Companies

Customer Focus is the second critical success factor and measures how well an organization defines its customers, determines their needs, and converts this information into measurably improved products and services in order to assist the implementation of TQM. Five items were investigated and analysed and summary statistics for each question are provided in Table 7-4

Table 7-4: Mean and SD of (CF) Factor

Factor	Item no.	Mean	S. D	Overall Mean
X2: Customer Focus (CF)	X2.1: CF/ Customer Consideration in strategies	3.99	2.18	3.55
	X2.2: CF/ Customer Requirements	3.69	1.91	
	X2.3: CF/ Customer Survey	3.70	2.05	
	X2.4: CF/ Encouragement of Employees	2.93	1.77	
	X2.5: CF/ Customer Complaints	3.39	1.88	

Descriptive analysis of the factor of Customer Focus (CF) shows that the grand mean of this factor is 3.55 on the ten-point Likert Scale. This result indicates a low level of customer focus which was a result of the low levels of its components of customer consideration during quality strategic planning (3.44), customer requirements and how they are measured and fulfilled (3.69), customer survey on how often and how it was followed up (3.7), employee encouragement to fulfil customer requirements (2.39), customer complaints, how they are collected and handled (3.39).

The standard deviation of the customer focus was moderate and ranged between 1.77 and 2.18. The dispersion of the responses around the mean was not high.

The results from table 7-4 show that the Libyan manufacturing companies do not give much attention to their customers. The qualitative data confirmed this with all the managers interviewed giving an impression of low customer focus as indicated by the quotation below:

“Satisfying a customer or knowing his requirement, was never an important issue in our organization, we have never discussed such issues, we have never considered it in our planning. We used to sell easily whatever we produced. Maybe now it will become different, now we have started to face strong competition in quality and prices from abroad , I think soon we will be in trouble, the management knows about it but they are not moving at all to improve the situation.”

The Libyan customer had been neglected for many years. During the early 1980s the country underwent very difficult times when government policies did not allow the importation of any material from abroad except basic food and medicine. During the 1990s the country also went through severe times because of the USA & UN embargos. The demand for consumer goods was exceeding the supply and anything sold without any effort, so why bother about customers or quality. Also the consumer knowledge of quality and its implications was limited. The absence of international competition as a result of the above restrictions and past protectionist measures has further hindered the growth of customer- based cultures.

Nowadays it is a different story and the country is open to international competition. The customer has started to see another world of quality, but Libyan organizations and government institutions are not making enough effort to change their status; employees have little interaction with external customers and often don't understand their expectations as one of the interviewees stated:

“Although things changed a lot, customer satisfaction does not represent any priority in our agenda; it is rarely mentioned in our management meetings.”

Customer satisfaction with Libyan companies is very poor and most managers and employees do not appreciate the principle of customer satisfaction. The employees' targets are focused on satisfying their supervisors or managers, and neglecting the customer. Unfortunately, employees in most of the Libyan Companies have no authority to make decisions about customer complaints; they can report them or

ignore them. This also takes place even where such employees are the customer-contact persons (or image-makers) of the organizations.

During the pilot study and the interviews with the Libyan managers, the expression 'internal customer' was not understood by most of the interviewees. The focus on customer satisfaction was not applied to internal customers at all as one of the interviewees said:

"I had never felt that I'm part of the company; I have no any feeling towards this company, I'm here just because I cannot get a better chance near where I live."

TQM experts are emphasizing that it will be difficult if not impossible to meet and exceed the expectations of the external customers if attention is not paid to internal customers. According to Dahlgaard et al. (2002), *"before you can satisfy external customers, however, you must first eliminate some of the obstacles to the internal customers (i.e. the employees) and create the conditions necessary for them to produce and deliver quality."*

UAE Managers' Opinions (Customer Focus Factor)

Because of the high competition in the market, UAE companies had to pay much attention to their external and internal customers and this is reflected in the overall planning and execution of quality efforts. UAE manufacturing organizations have demonstrated their commitment to the highest levels of customer satisfaction, and this is was clear from the following quotations from some of the interviewees

"In our company, customer information is available through normal routines. Customer satisfaction is seen as the company's highest priority. The organization believes it will only be successful if customers are satisfied. Our company is sensitive to customer requirements and responds rapidly to them. Company (E)

"The Customer Survey feedback is discussed in the Management review meeting and areas are identified for improvement. Based on this further action plan and the responsibilities are fixed." Company (C)

"We have established simple and effective complaints procedures so that problems can be resolved quickly and efficiently and to our customer

satisfaction. After every remedy, an action and the customer contacted to seek a positive feed back which should be documented” **Company (D)**

“The primary reasons for assessing customer satisfaction are to maximize customer retention, and to gain and build customer loyalty. Our management believes customer satisfaction surveys should be conducted a minimum of twice a year and a maximum of four times a year.”
Company (E)

Every organization depends on its customers. Without satisfied customers, the organization cannot exist. Therefore, customer satisfaction is an important requirement of Dubai quality award and ISO 9001:2000.

7.2.5 Factor (3) - Process Management (PM)

Libyan Companies

Process management (PM) is the third critical success factor chosen to measure how well an organization determines its core processes, reviews and analyses them and continuously improves them in order to assist implementation of TQM. Eight items were investigated and analysed and summary statistics for each question are provided in Table 7-5

Table 7-5: Mean and SD of (PM) factor

Factor	Items	Mean	S. D	Overall Mean
X3: Process Management (PM)	X3.1: PM/ Process Measurement	3.84	1.87	4.24
	X3.2: PM/ Procedures – Instructions	4.29	1.83	
	X3.3: PM/ Statistical Techniques	3.88	1.92	
	X3.4: PM/ Reduce Waste	3.89	2.10	
	X3.5: PM/ Improvement Teams	3.60	1.85	
	X3.6: PM/ Calibrations	4.40	2.06	
	X3.7: PM/ Housekeeping	4.88	1.99	
	X3.8: PM/ Research for Improvement	4.88	2.01	

Descriptive analysis of the process management factor (PM) of TQM shows that the overall mean is **4.24** on the ten-point Likert Scale. This indicates a medium level of process management which was a result of medium levels of procedures and

instruction (4.29), calibrations (4.4), housekeeping (4.88), research for improvement (4.88), low levels of the components of process management (3.84), statistical techniques (3.83), waste reduction (3.89), and team improvement (3.60). The standard deviation of the process management was moderate (STD) ranging between 1.83 and 2.10.

From the data analysis (questionnaire and interviews) none of the Libyan organization was using a proper process management approach although 19.8% of the organizations who participated in the survey were ISO registered companies. Every process is considered as a routine job repeated for so many years according to the vendor's manual and nobody is allowed to change any procedures. One supervisor stated that

“We do what they want us to do, we just run our plants according to the production capacity stated by the vendor, maybe 15 years ago.”

Introducing ISO 9000 and gaining certification does not always mean improvement in the system, especially when it is introduced as a result of external pressure which was found to be the most dominant reason driving the Libyan organizations to implement quality management systems, as quoted below

“Yes we are certified for ISO 9000:2000, but it did not bring much difference to our daily operations, just some improvement in documentation and less customer complaints, I think the whole program was just a response to pressures coming from our clients abroad who buy our product.”

There was no evidence that any of the Libyan organizations interviewed used any modern tools for measuring or controlling the processes (SPC, Process Capability, 5S technique, Kaizen, Pokka Yoke). Two companies said that they have conducted training programs for their engineers on statistical process control but never implemented them in the production lines.

UAE Manager's Opinions (Process Management Factor)

UAE manufacturers are under intense pressure to find new ways to cut costs, improve productivity and boost customer satisfaction. The only way to achieve and retain

customer satisfaction and to keep customers loyal is to improve the daily processes to cope with changeable customer requirement. From the interview analysis, UAE manufacturers have been working hard to be competitive and become process organizations. This can be supported by some quotations of the managers interviewed:

We use Key Performance Indicators as a performance management tool. KPIs give everyone in the company a clear picture of what is important, of what they need to make happen. We Post the KPIs every where: in every control room, in the lunch room, on the walls of every conference room, Show what the target for each KPI is and show the progress toward that target for each of them. People will be motivated to reach those KPI targets". **Company (C)**

Efficiencies across units are sought and achieved, through analysis, innovation, and sharing. Processes and measures track progress on key strategic and operational goals. **Company (B)**

The organization continuously improves its capability by deploying opportunistic improvements and targeting specific processes for proactive improvement. **Company (E)**

The greatest advantage of process management is that it helped our organization to understand how things are really done, revealing problems, bottlenecks and inefficiencies in the system. **Company (A)**

Process Criteria (Dubai Quality Award)

"Excellent organizations design, manage and improve processes in order to fully satisfy, and generate increasing value for, customers and other stakeholders". Dubai Quality Award, (2004)

- 5a *Processes are systematically designed and managed;*
- 5b. *Processes are improved, as needed, using innovation in order to fully satisfy and generate increasing value for customers and other stakeholders;*
- 5c. *Products and Services are designed and developed based on customer needs and expectations;*
- 5d. *Products and Services are produced, delivered and serviced;*
- 5e. *Customer relationships are managed and enhanced.*

For the Libyan companies to be competitive? and survive globalization they must find ways to become process oriented, cut costs, improve productivity, and boost customer satisfaction. Libyan organizations should benchmark their processes against their UAE peers and adopt some of their solutions to eliminate waste, simplify processes, and continuously improve all aspects of their organization.

7.2.6 Factor (4) - Training & Development (T&D)

Libyan Companies

Training & Development is the fourth critical success factor chosen to measure how well an organization implements training programs in order to assist the implementation of TQM. Seven items were investigated and analysed and summary statistics for each question are provided in Table 7-6.

Table 7-6: Mean and SD of (T&D) Factor

Factor	Item no.	Mean	S. D	Overall Mean
X4: Training & Development (T & D)	X4.1: T&D/ Training Needs	3.78	1.93	3.77
	X4.2: T&D/ Supervisors Involvement in Training	3.72	1.84	
	X4.3: T&D/ Training Resources	4.16	1.85	
	X4.4: T&D/ Modern Training Methods	4.01	1.84	
	X4.5: T&D/ On the Job Training	3.57	1.87	
	X4.6: T&D/ Training Evaluation	3.77	2.01	
	X4.7: T&D/ Training Records	3.39	1.97	

Descriptive analysis of the training and development factor of TQM shows that the grand mean for this is 3.77 on the ten-point Likert Scale. This indicates a low level of training and development which was a result of not enough of training resources allocated to support training and cover the whole training needs of the organization (4.16), medium level of modern training (4.01), low level of on the job training (3.57), low level of training evaluation (3.77) and a low level of training records (3.39).

The results from the quantitative analysis, table 7-6, found that Libyan manufacturers did not provide enough training in quality management for employees. Because of this, many employees could not grasp quality tools and techniques. Several studies

have also revealed that training and education are critical to successful TQM implementation (Quazi and Padibjo, 1998; Thiagarajan and Zairi, 1998; Zhang Z., 2000b).

From the interview analysis most of the Libyan respondents acknowledged that most organizations have spent some time and money on training programs, especially technical training. The training content, timing, length and methods were not well designed to cover the real training needs and training was undertaken with no real solid objectives to fulfil, as one of the Libyan interviewees stated:

“There is no clear scheme for identifying training needs and training objectives usually are not well defined, we do not measure the performance of the trainees after the training event.”

The generally poor educational system in Libya (quantity was favoured and quality was overlooked in the process, with the aim of eradicating illiteracy in the country) produced unskilled workers who should go through extensive on-the-job training. However, this can drive up the training costs and render TQM implementation quite expensive, as stated by one Libyan expert:

“I do not think the educational system is preparing graduate students for the variety of jobs in the marketplace, work forces need to be re-educated and heavily trained to reach the manufacturing standards.”

UAE Managers’ Opinions (Training and Development Factor)

All interviewed UAE organizations have developed and organised programs to equip their employees with up-to-date and relevant knowledge, skills and abilities beyond what was taught in university (to raise their employees performance up to Dubai quality Award standards). Organised programs must always remain aligned with the fast changing landscape of practice and needs of the profession to build up a competent manpower that can implement and maintain quality plans. Examples expressed by the interviewees are included below:

“To supply world class quality products and services we must engage and retain a highly professional, well-trained and motivated workforce.”

Company (A)

“According to company policy all supervisors and managers should enable and provide training and development for their people – every supervisor and line manager has been trained as trainer.” **Company (B)**

“The organizations placed a high premium on educating the top management team in principles of leadership, including modern management concepts such as empowering and involving workers rather than controlling, strategic planning from the perspective of the customer, and dynamics of organization change.” **Company (E)**

“A hundred percent of our staff trained in the basics of quality management systems, especially when we started introducing quality programs in 1995, and now every employee receives specialized training to fulfil his task and most of our line managers were trained as lead Assessor.” **Company (D)**

“I enjoy the working for this organization. It has a wealth of training and experience which provide excellent resources and learning opportunities for me.” **Company (C)**

Libyan companies should study the example of UAE companies and learn how to transfer their manpower up to TQM standards. All employees including top management should be highly trained, motivated and empowered to be able to fulfil the process and customer requirements. According to Thiagarajan and Zairi (1998), Yusof and Aspinwall (2000) and Calisir et. al, (2001), awareness training is a critical first step. Employees need to know how to change and what to do differently for quality improvement to happen. This involves the provision of training in quality tools, problem identification and solving skills, in communicating effectively, teamwork and decision making to foster continuous improvement. Ahire et al. (1996), emphasized that unless employees have received formal systematic training in quality awareness and quality tools, any sort of involvement will not be effective.

Middle managers must be well trained in implanting quality principles and tools, and they must be trained as trainers and cascade training to their subordinates, this involvement in training will make them obliged to make the trip to quality smooth and successful.

TQM education and training is a critical factor for success in organizational quality transformation. Crosby (1989) said “the purpose of executive education [in TQM] is to help senior people understand their role in causing problems and then causing improvement in the quality process.” He claims “Mistakes are caused by two factors:

lack of knowledge and lack of attention.” Education and training can eliminate the first cause and a personal commitment to excellence and attention to details will help address the second.”

7.2.7 Factor (5) - Employees’ involvements (EI)

Libyan Companies

Employees’ Participation and Involvement is the fifth critical success factor chosen to measure how well an organization is involving its employees in improvement initiatives in order to assist implementation of TQM in the Libyan manufacturing sector. Nine items were investigated and analysed and summary statistics for each question are provided in Table 7-7

Table 7-7: Mean and SD of (EI) Factor

Factor	Items	Mean	SD	Over all Mean
X5:Employees Participations and Involvements (EI)	X5.1: EI/ Suggestion System	3.10	1.72	
	X5.2: EI/ Suggestion Sys. Implementation	2.77	1.54	
	X5.3: EI/ Encouragement	3.11	1.81	
	X5.4: EI/ Cross - Functions Teams	3.04	1.83	
	X5.5: EI/ Activities – communication	3.74	1.93	
	X5.6: EI/ Working Environment	3.86	1.84	
	X5.7: EI/ Delegation	3.62	1.76	
	X5.8: EI/ Employees Satisfaction	3.66	1.90	
	X5.9: EI/ Motivations - Recognitions	3.60	1.70	
				3.39

Descriptive analysis of the factor of employees’ participation and involvement (EI) of TQM shows that the grand mean of this factor is **3.39** on the ten-point Likert Scale. This indicates a low evel of employee participation and involvement in TQM activities, in part due to low levels of availability of suggestion systems (3.1), suggested system implementation (2.77), problem reporting (3.11), team function (3.04), low communication activities (3.74), working environment (3.86), delegation (3.62) measurement of employee satisfaction (3.66), and motivation recognition (3.60).

The standard deviation of employees participation and involvement (EI) was moderate ranging between 1.54 and 1.93.

According to the TQM literature and the quality awards requirements and guidelines, employee involvement and participation at all levels are critical factors that influence the effectiveness of an organization's TQM efforts.

The findings from the analysis of quantitative (table 7-7) and qualitative data show clearly that employees are not sufficiently involved in the LMC's daily activities. This means that issues affecting employees' involvement are not being given appropriate attention. This could cause a serious failure of any quality initiative even if it was pushed from the top for a while. Only when top management is committed and all employees are involved can the organization's vision be fulfilled, and every employee in the organization know what is expected of him; then the improvements will become daily practice and the organization can create a new quality culture.

“Employee involvement means getting away from an ‘us and them’ mentality and making all employees part of the solution. It’s a transforming process for an organization. Quality is very much about commitment and leadership.”

Unfortunately this is not always the case within the Libyan context, where creating vision is not common practice in LMCs and none of the organizations interviewed could produce a clear vision statement or plan to deploy their policies; as stated below by one of the Libyan interviewees:

“Although the top management asked us to implement ISO 9000, they never communicated their vision to the whole organization and they don’t put a serious effort into creating a supportive working environment for employees. They give orders to go ahead with ISO 9000, because it was needed for the external market.”

One of the Libyan quality specialists argued that

“Libyan organizations are still practicing out of date management approaches and policies stressing control (people, cost, information). I think they have an authoritative management style where executives continue to operate the same old way, give orders, want to impose the change and expect it to happen without involving, managers, supervisors and employees.

I think they are out of date; they need a lot of awareness in change management and modern management techniques and tools. They are killing their organizations.”

The researcher noticed during the interviews that the Libyan employees do not have a feeling of belonging to their organization; they do not feel that they are a part of it. Managers, supervisors and employees have to follow instructions, and do whatever they are asked to do according to their job position and responsibilities. It is clear that Libyan organizations do not motivate and empower their employees to participate in any sort of change effecting their organizations, or suggest any improvement.

“Too many people are working too hard for too little result: incentives are not there at all. The motivation is only the challenging job, honour of society and experience.”

Because of the absence of motivation and recognition Libyan companies are starting to lose their best experts and engineers who are not satisfied with salary, motivations and recognition:

“Many excellent people have left to other countries in the Gulf area (Dubai and Qatar) because of unfair salaries and lack of motivation and there was no recognition whatsoever to acknowledge their talent and their efforts.”

In most Libyan companies, training to introduce ISO 9000 was limited to a small number of employees who were expected to follow the implementation of ISO 9000 with the consultant. They usually call them the ISO committee and there were no plans to train top or middle management or lower level employees. This caused strong resistance and made any initiative limited to the ISO committee; other employees were just an audience to blame top management and the ISO committee for any failure of quality management systems. There was no evidence of forming quality improvement teams to study the problems facing an organization and solve them. Management formed teams from time to time but it was always just a collection of frustrated people who got together periodically:

“We always form teams to discuss problems, but it always takes them such a? long time to meet and from the start usually they don’t have the faith that they can do that much and at end they usually come up with a very poor report which is just the describing the problem as it is now, they usually do not dig into? data and find the causes and try to propose a real solution, plus they cannot implement any idea without writing to higher management.

They usually do not have adequate resources, incentives and authority to make decisions.”

All Libyan managers interviewed were willing to get their employees involved, delegate them some authority and reward them, but *“the policies of the company and government does not allowed that, and it been like that for more than 25 years.”* This fact had been mentioned by more than one manager.

“The employees received a good training and they are skilled enough to do their jobs up to good standards and they are much disciplined. The problem is that they are not motivated, and we cannot do anything about it because of the strict old polices, which are imposed in all organizations by the government, and everybody knows about it, it is just chronic diseases.”

From the interviews with Libyan managers, there was no evidence of good communications between the top management and low level employees, which is a vital step to introduce quality management to the organization through employee involvement. Communication is the first step to open channels of understanding between management and employees and to build trust and respect which is not the case now in LMCs as one of the interviewees stated:

Usually there is a good communication between employees themselves in the different departments, they cooperate with each other to solve so many problems, they do not like management to interfere, they think managers could easily complicate the whole matter and cause delays.

Overall, in all the Libyan interviewed companies there was clear evidence that employees in these companies are somehow trained and have good experience, but they are not really motivated to be involved in implementing TQM programs in their organization. Getting registered to ISO 9000 by itself cannot produce results. The effectiveness comes through people with a ‘Total Quality Mind-Set’.

UAE Manager’s Opinions (Employee’s Involvement Factor)

The companies interviewed from UAE were the most successful companies (who won a Dubai quality award). Those companies have achieved a close relationship between workers and managers. The policies in these companies fostered teamwork, participation, continuous learning and flexibility. However, the change from

conventional management practices to the new style was not achieved overnight; learning and implementing participative management will require a lot of effort and time. Implementation of employee involvement systems will require many changes in the existing company practices and culture.

All the companies interviewed in UAE emphasised role of managers in the achievement of successful employee involvement. In addition, the majority of companies had made some efforts to bring about the changes in management approaches felt to be required.

“For TQM to be successful in the business, the top management must be committed in leading its employees. A top management must understand TQM, believe in it and then demonstrate their belief and commitment through their daily practices of TQM.”

Company (A)

“Each level of the organization has the opportunity to provide input to the plan. The most knowledgeable front line workers are just as important as the top executives. Each employee knows what she or he needs to do, and how to meet the goals/objectives of his or her department.”

Company (B)

“In our company we use various means of communication, such as regular meetings, Intranets, newsletters, posters, videos, and open days for communication purposes, where all our employees can meet and talk with top management.”

Company (C)

“Our Suggestion Scheme is rated among the best programmes of its type in the world and the company is often asked to share its expertise with respect to the Scheme with other organizations that are interested in continuous improvement.”

Company (D)

Overall, in all the UAE interviewed organizations, there was a strong view among managers that the various quality initiatives had facilitated communication between management and workers, and increased workforce involvement in problem-solving generally.

People Involvement Criteria (Dubai Quality Award)

“Excellent organization managers develop and release the full potential of their people at an individual, team-based and organizational level. They promote fairness

and equality and involve and empower their people. They care for, communicate, reward and recognise, in a way that motivates staff, builds commitment to using their skills and knowledge for the benefit of the organization.” Dubai Quality Award (2004)

- 3a. People resources are planned, managed and improved
- 3b. People’s knowledge and competencies are identified, developed and sustained
- 3c. People are involved and empowered
- 3d. People and the organization have a dialogue
- 3e. People are regarded, recognised and cared for

According to Dahlgaard, quality is to continuously satisfy customers’ expectations, total quality is to achieve quality at low cost, while total quality management is to achieve quality through everybody’s participation (Dahlgaard et al., 1998).

7.2.8 Factor (6) - Data Quality

Libyan Companies

Quality of data and measurement is the 6th critical success factor chosen to measure how well an organization designs, implements and improves its operational information systems and utilize the information for driving quality improvement, in order to assist implementation of TQM. Five items were investigated and analysed and summary statistics for each question are provided in Table 7-8

Table 7-8: Means and SD of (Data) Factor

Factor	Item no.	Mean	SD	Overall Mean
X6: Quality Data and Measurement (Data)	X6.1: Data/ Decisions	3.33	1.59	3.37
	X6.2: Data/ Performance Measures	3.51	1.79	
	X6.3: Data/ Comparison with International Indicators	3.38	1.70	
	X6.4: Data/ Information For Improvement	3.37	1.62	
	X6.5: Data/ Information Reliability	3.30	1.72	

Descriptive analysis of the factor of Quality Data and Measurement of TQM shows that the overall mean is **3.37** which is relatively low compared with the ten point Likert Scale. This low level quality data and measurement of TQM activities is due to the low level of using data in decision making (3.3), low level of data performance measures (3.51), low level of data comparison with international indicators (3.38), low level of data information for improvement (3.37) and low level of data information reliability (3.30). The standard deviation of the Quality of Data and Measurement factor of TQM was not high as it ranged between 1.59 and 1.79 which indicated a low level of dispersion of data around the mean, as shown in table 7-8.

TQM approaches emphasize that the organization should provide effective measurement systems to compare the output of its processes against these measures and indicators and to use output from performance indicators to establish strategic goals (Kaplan and Norton, 2000; Kennerley and Neely, 2003; Neely, 1999).

For TQM to produce maximum benefits, it should focus on management by facts tools, such as customer surveys, employee surveys, quality costing, self assessment, benchmarking; as has always been recommended by quality movement experts (Douglas and Judge, 2001; Easton and Jarrell, 1999; Kanji and Tambi, 1999).

Libyan companies tend to be managed by gut feeling; most of their decisions are based on opinions rather than on any well-defined approach or on the analysis of collected data. As one interviewee stated:

“Most of the organization’s decisions don’t last for long, they contradict each other, all decisions are made behind doors, without us knowing, they don’t consult us, they don’t use data to make decisions.”

There were some difficulties in obtaining data including the lack of any survey activities by most of the companies, lack of research and development units, and the lack of other external institutes that conduct such activities. There is no kind of information sharing between Libyan organizations, which makes benchmarking against competitors or best practice in the country not visible. Information about operations is passed up the hierarchy and orders from bosses are passed down. In practice, neither process operates according to the ideal.

“Because workers are afraid of the consequences of telling the truth, they commonly tell bosses what they think the bosses want to hear. The top managers thus can become quite out of touch with what’s happening.”

The information flow between the different managerial levels as well as between the supervisor and their subordinates needs to be improved. Messages should be clear and understood which is not the case now in (LMC) as was declared below:

“Managers and supervisors don’t share their accumulated experiences and knowledge with their employees. They want them to be dependent on their advice and instructions.”

“When you have a system which does not make use of available data you have a waste of data (Decker, 1992).”

From the researcher’s experience, most Libyan companies control information to cover up vital mistakes or bad decisions and to protect themselves where they show only the positive side of their internal operations. If a company reveals its plans or its internal operations to outsiders (even to university students) it makes itself vulnerable to critics, whether stock holders, government security or lobby groups.

According to Ashworth and Harvey (1994), an organization should have robust data gathering and analysis to use as a means of measuring its performance to know where it is going and what resources and tools are needed to get to the target. This is

consistent with Oakland (2000) who listed the following points as the main reasons why measurement is needed and why it plays a key role in quality improvement:

- To ensure customer requirements have been met.
- To be able to set sensible objectives and comply with them.
- To provide standards for establishing comparisons.
- To provide visibility and provide a 'score-board' for people to monitor their own performance levels.
- To highlight quality problems and determine which areas require priority attention.
- To give an indication of the costs of poor quality.
- To justify the use of resources.
- To provide feedback for driving the improvement effort.

UAE Manager's Opinions (Data Factor)

Measurement and quality of data are recognized as a cornerstone of Dubai quality award. All the UAE companies interviewed had established an information gathering system, able to understand its environment (process performance, customer and employee's satisfaction, market surveys) and to use the feed back from all this measurement tools to develop a highly disciplined planning and measurement process as it can be noticed from the quotations from different UAE organizations.

"Without measurement, an organization cannot possibly know which processes are working efficiently and effectively, what products and services are meeting quality standards, and whether or not customer requirements are being satisfied." **Company (B)**

"We use what we call Project tracking system, which is a good practice of fact-based management, that only by collecting relevant data and establishing the facts, you can make reasonable decisions. Knowing what went wrong and what was effective will make you better use your resources." **Company (C)**

"We believe that sharing information gave employees a better sense of how their efforts fit into the overall organizational performance and contributed to a sense of employee involvement." **Company (A)**

“A comprehensive set of measures or indicators tied to customer and/or company performance requirements, have been distributed to people concerned with different areas, and are very easy accessible through the electronic media.” **Company (D)**

7.2.9 Factor (7) - Supplier Quality Management (SM)

Libyan manufacturing organizations

Supplier quality management is the seventh critical success factor chosen to measure how well an organization is opening channels of communication with its suppliers and sharing the information with them in order to assist implementation of TQM. Five items were investigated and analysed and summary statistics for each question are provided in Table 7-9

Table 7-9: Means and SD of (SM) F actor

Factor	Items	mean	SD	Over all Mean
X7: Supplier Quality Management (SM)	X7.1: SM/ Selection Basis	4.09	2.04	3.86
	X7.2: SM/ Relationship	4.04	1.95	
	X7.3: SM/ Delivery	4.12	2.03	
	X7.4: SM/ Quality Audit	3.74	1.98	
	X7.5: SM/ Information Sharing	3.32	1.85	

Descriptive analysis of the factor of Supplier Quality Management (SM) of TQM shows that the overall mean is **3.86** which is relatively low compared with the ten point Likert Scale. This low level quality data and measurement of TQM activities is due to the medium level of selection basis (4.09), relationship with suppliers (4.04), medium level of supplier delivery (4.12), low level of quality audit (3.74), and low level of information sharing (3.32).

The standard deviation of the data on the Supplier Quality Management (SM) of TQM was not high as it ranged between 1.85 and 2.04 which indicated a moderate level of dispersion of data around the mean as shown in table 7-9.

From data analysis (questionnaire and interview) it was clear that all the Libyan organizations interviewed do not have any sort of long-term cooperative relationship with their suppliers. They had to conduct inspections for purchased materials from their suppliers in order to ensure specified quality levels. Wrong orders and out of spec. materials were always causing delays and problems to maintenance and production units. Since most Libyan organizations were under the materials supply embargo imposed by the USA, most of the international suppliers were hesitant to deal direct with the Libyan organizations; there was always a third party supplier. Most managers felt that having more than one supplier for the same item is safer. As a result, long-term relationships with suppliers were not targeted in most cases. As stated by one of the interviewees

“As result of the USA embargo, we were buying anything we can find, we did not have much choice to choose our supplier, actually most of the time we were dealing with brokers not real suppliers, there were a lot of materials out of specifications, so it was unique situation.”

None of the Libyan organizations appeared? to apply any sort of partnership with their suppliers or try to open any communications channels to improve quality or reduce costs; it had always been a rigid technical relationship, as it was pointed out below:

“The only connection with the supplier is his written offer. If it is acceptable, technically and price-wise, then we place the order, and we inspect the materials when they arrive to our site (100% inspection). If there is non-conformance we write to him and negotiate replacement, unfortunately, most of the time it was wrong written order from our side and we end up with non-usable stock and we cannot get rid off.”

“If the order is concerning expensive orders and there is manufacturing of new materials like compressors, turbines and boilers, then we use third party or we send engineers to inspect the materials in the manufacturer shop, prior to shipping.”

UAE Manager's Opinions (Supplier Quality Management Factor)

The UAE organizations interviewed had shown advanced approaches in dealing with suppliers by looking not only at current quality but also at their quality record, their potential for further improvement and their implementation of total quality management.

UAE leading companies always consider the quality of their products, depending upon the quality of sourced parts, and they exchange information with the suppliers to solve any quality problems, as was quoted by the interviewees below:

“We see our suppliers as partners, we work very close with them to improve quality and the exchange of information through joint problem solving, we trust each other and we built up confidence of a long term relationship.”
Company (B)

“Prior to a contract award, we verify the capability of each supplier by conducting a comprehensive review of that supplier’s business practices, manufacturing and inspection capabilities, and quality.” Company (c)

“Our suppliers know they have to comply exactly to agreed specifications and this releases us from in-bound inspection and the resultant delays in production.” **Company (A)**

“The company is so confident in the supplier’s quality for one critical component that comprises 70 percent of the total cost of supplier material, inventory has been reduced by 68 percent; reduced the number of suppliers by 50 percent, reduced the number of defects from suppliers by 90 percent; and re-examined and eliminated unnecessary specifications.” **Company (D)**

“As I mentioned before every employee in the organization should know how he fits in the big picture, that is the first step to create quality culture in the company, it depends on policy deployments, awareness, participation, communication, recognition and rewards, which all creates the quality culture, and builds up feeling of belonging. When top management take care of this, and take care to create quality culture, the employees will take care of the company. And this is what has been reached, by strong support of our top management and I hope to sustain it.” **Company (E)**

7.2.10 Factor (8) - Continuous Improvement (CI)

Libyan Companies

Continuous improvement is the eighth critical success factor chosen to measure how well an organization is using the traditional quality ‘plan-do-check-act’ model or any other approach to consistently improve its process in order to assist implementation of TQM. Five items were investigated and analysed and summary statistics for each question are provided in Table 7-10

Table 7-10: Means and SD of (CI) factor

Factor	Items	mean	SD	Over all M ean
X8:Continuous Improvement (CI)	X8.1: CI/ Processes Reviewed	3.99	1.72	3.57
	X8.2: CI/ Quality problems Analysis	3.41	1.79	
	X8.3: CI/ Benchmarking for Improvement	3.69	1.72	
	X8.4: CI/ Innovation	3.54	1.79	
	X8.5: CI/ Quality Culture	3.22	1.68	

Descriptive analysis of the Continuous Improvement of TQM shows that the overall mean is 3.57 which is relatively low compared with the ten point Likert Scale. This low level of continuous improvement of TQM activities is due to the low level of processes reviewed (3.99), lack of problems analysis (3.41), low level of benchmarking for improvement (3.69), low level of innovation (3.54), and low level of quality culture (3.22).

Continuous Improvement (CI), means making things better. Continuous Quality improvement refers to all efforts directed to increase effectiveness and efficiency in meeting accepted customer expectations. Continuous Improvement involves analyzing and redesigning processes to remove barriers and inefficiencies in the organization.

Process Improvement entails small increments over a period of time, by improving one or two processes at a time. The success of quality improvement is based on the understanding of every member of the organization concerning the needs of their customers (internal and external).

Although the companies interviewed were all ISO 9000 certified, and they have quality manuals, vision and mission, unfortunately none of them showed any recognized quality improvement after their registration to ISO 9000:2000 except some improvement in documentation systems or reduction of customer complaints. To be able to energize employees to work towards corporate goals, the visions and missions should be more than a sign on the wall. Executives and managers should live them, and constantly communicate them to their employees.

“Visions and mission statements are used for nothing but being published in the first page of the quality manual or in the annual report and displayed in a reception area.”

Continuous Improvement - involving using the ‘old’ and ‘new’ quality tools is commonly used in TQM (Hoshin Kanri/Kaizen date) to define and solve problems, as well as process charts, Pareto analysis, Ishikawa (cause & effect) diagrams, histograms, run diagrams, SPC and check sheets, affinity diagrams, etc. Then the Shewhart and Deming cycles are used to improve and sustain the improvement of processes and systems in a holistic approach.

Non of the Libyan organizations use the above mentioned tools for improvement purposes except a little use of histograms and check lists, in engineering departments .

UAE Managers’ Opinions (Continuous Improvement Factor)

UAE organizations are always looking for improvement; they are always trying to prevent problems and errors, rather than simply fixing them. They use cross-functional teams with representation from a number of units or levels in the organization to make the whole organization push in one direction which is improvement and customer satisfaction. Quotes below show the effect of improvement in UAE originations

“We established quality measurement systems to measure our progress in continuous quality improvement. Some of the tools used to monitor progress in all processes include external and internal customer surveys, auditing or organizational self-assessments, customer complaint and resolution systems, and statistical tools.” **Company (A)**

“The needs for change could come from, employees’ ideas and surveys, because they are the closest to the process’s employee ideas; it could be from customer input or R&D, also you can discover a lot of needs through the Benchmarking with “best practices” companies.” **Company (B)**

“Continuous improvement can be more than merely a formal system of business management. Companies that do not continuously improve everything they do for their customers may soon find themselves out of business.” **Company (C)**

“The employees can make important contributions in continuous improvement efforts when they have the necessary power and skills. Managers and engineers can only participate in continuous improvement process if they have been well trained in the use of quality control tools and they are motivated and empowered.” **Company (D)**

“Our goal here is to get continuous improvement from all sources, and get better and better and better at what we do. Ideally, this sort of system would run itself. You definitely end up with a workforce more knowledgeable about what they do over the long term.” **Company (E)**

Quality improvement aims at increasing the effectiveness and efficiency of processes to meet customer expectations. This entails better understanding of the market, innovating the products and processes, managing and distributing material and finished products and providing good customer service. For quality improvement to be successful every member of the organization should have a clear understanding of customer requirements. To maintain this understanding there has to be a constant interaction with the customer and measurement of product against his expectations.

7.3 Barriers to Establish TQM

In most of the developing countries, the major quality barriers are coming from the traditional culture of hierarchical, bureaucratic and authoritarian organizational structure. Harrigan (1985) stated that “the barriers to flexibility can be asset-specific, but they are more likely to be mental. Too many managers refuse to face the ugly

reality that they are in a sick business or that their firm's strategic posture is simply wrong."

In investigating implementation of TQM in the Libyan companies, several statements were made about barriers and the interviewed Libyan managers were asked to rank the five barriers they faced most, based on their knowledge of implementing quality initiatives in their organizations.

7.3.1 Barrier (1) Top Management Commitment: Libyan companies

The Major barrier to quality initiatives in Libyan companies has been the lack of top management commitment which is usually followed by negative consequences such as lack of employees' involvement; lack of incentives and motivations; inadequate resources, employee resistance to change, inadequate performance evaluation, lack of customer care, and lack of continuous improvement.

Usually the top management initial reception to TQM is positive, but most of the time is only in the form of verbal support, and forming committees to do the job without any preparation of the battle ground. As a result, strategic and quality management practices is often delegated to those committees and usually they do not have the knowledge and the tools to do the tasks. Ultimately, it is management's responsibility to plan and lead the organizational change required for TQM success, as was pointed out by a Libyan senior manager during the interview:

"To introduce TQM to organization and make it successful, the senior management would require being fully knowledgeable and committed, to understand the reason for choosing a certain approach, be quite keen to see the results through the performance criteria they use."

Top management commitment and support, clarity of the quality vision, mission strategies and policy deployment are of crucial importance in the management of change and thus critical for the success of TQM. The results are consistent with the literature of similar findings which have also been concluded by Ahire and O'Shaughnessy (1998); Tamimi and Sebastianelli (1998); and, Salegna and Fazel (2000).

7.3.2 Barrier (2) Salary and Incentives: Libyan Companies

The second barrier to quality initiatives in Libyan companies has been salary and incentives. An important barrier under which every Libyan organization has to operate is the low level of salaries for all levels of employee. All employees in the public sector are state employees and the Government fixes their salaries as well as yearly increases in their salaries under a rigid law called (law 15/83), which it did not change or increase for 25 years. Consequently, it is difficult to motivate staff to work harder or to be more efficient or more effective. If you compare the salary of a Libyan engineer with the salary of an engineer from UAE companies with the same level of experience and education, the ratio would be approximately 1:8, this has caused losing experienced Libyan engineers and technicians to the benefit of UAE organizations, hence so many well-trained engineers and technicians have left their jobs in Libyan companies and joined the UAE manufacturing oil industry. Furthermore, this Libyan rigid standard salary system is based on years of service rather than the person's performance, whereas a competitive and quality management system adopts a performance-based system in which salary and job position is determined by the current performance of the staff.

7.3.3 Barrier (3) Organization's Bureaucracy: Libyan Companies

The third barrier to quality initiatives in Libyan companies has been the organization's bureaucracy. Bureaucracy is the greatest day-to-day problem and a major challenge for all Libyan companies. Libyan authoritarian and bureaucratic management styles have been impeding more participatory and quality conscious organizational cultures. The effect of this barrier was clear from the feedback of all the interviewees in the Libyan organizations

"I think Bureaucracy is No 1 barrier. It makes people frustrated and it causes a lot of delays and waste of time. What it should take one week; it takes one year to get the feed back, how we can talk about improvement or suggestion system in such environment?"

The status quo of the Libyan companies is consistent with the evaluation of Jack Welch (date?) when he said:

“The model of business in our organization had not changed in decades. Workers worked, managers managed, and everyone new their place. Forms and approvals and bureaucracy ruled the day.”

which is consistent with what was said by one of the interviewees:

Libyan bosses exercise control by insisting on following old policies (not changed for 25 years), standard operating procedures, doing a job according to standard procedures can become more important than doing the job well.

Top management alone cannot lead the change and transfer their organizations to a better position without involving the rest of the organization and start to be more open in style and come down from their “*ivory towers of management*” and get their people involved in daily improvement and decision-making. This is consistent with what has been mentioned by Jennings and Haughton (2002) “*The more dead weight at the top of the organization involved in the decision-making process the slower the decisions will be made.*” This is supported by the statement of one of the interviewees:

“Our top management always say that they are welcoming change but they do so only within the framework of their own terms. They always reject any change that they have not themselves initiated.”

Libyan senior managers usually are reluctant to involve potential young managers and engineers. They think they do not possess the skills require to contribute in making decisions. This will never lead to progress in any sort of quality initiatives and according to Wynne (Wynne, 2001) “*As long as the new potential staff and engineers are viewed by many senior executives as not being able to play in the corporate big leagues, this situation is unlikely to change.*”

“Top management determine who can or cannot participate in decision-making. Young engineers and young managers are not permitted to participate in any significant way.”

“Top management, middle management, supervisors, are all exercising power by supporting workers who support them personally and by penalising those who criticise or just annoy them.”

Smith (1984) argues that bureaucracy also determines who can or cannot participate in decision-making. Those lower down the bureaucratic hierarchy are not permitted to participate in any significant way.

Jack Welch the General Manager of General Electric has always hated and fought bureaucracy. To him, *“Bureaucracy is the enemy. Bureaucracy means waste, slow decision making, unnecessary approvals, and all the other things that kill a company’s competitive spirit.”* Krames (2002).

7.3.4 Barrier (4) Training: Libyan Companies.

Another barrier to cause to effect TQM implementation is training. As was mentioned by most of the Libyan interviewees, most managers have not received formal quality management training; it was only oriented to the group of employees who were following the ISO 9000 implementation. Training for all levels of an organization is of fundamental importance and must be provided continuously, as mentioned by one of the Libyan quality experts interviewed:

“Employees must be well trained to a certain level of confidence so they can perform the new tasks and behave in the way expected from them in solving their daily problems. Efforts to force change without preparing the ground and giving the right support and training for the individual will not get the organization any further in its quality movement.”

or as it was said:

“Lack of understanding of TQM principles, techniques and tools leads to lack of effective communication of TQM message deployment. This, in turn, leads to lack of commitment to TQM implementation.”

The above quotes are consistent with Ahire et al. (1996), who emphasized that an employee empowerment and involvement framework is not effective unless employees have received formal systematic training in quality management.

Honeywell has an ongoing employee learning program. Every employee is required to have at least 40 hours of learning each year. The company has established learning centres where employees attend classes, and it has developed a comprehensive learning curriculum offering employees a wide range of class offerings designed to support their professional development.

7.3.5 Barrier (5) lack of employee participation: Libyan Companies

Another barrier has been the lack of employee participation and involvement. Literature increasingly shows that employee involvement is essential to achieve quality and productivity improvement. Successful employees' involvement requires that leaders/managers initiate and maintain the process of involvement and provide access to resources that people need in order to contribute. It is only when involvement is practiced effectively that human commitment and creativity will fuel process improvement. Having an open work environment where employees can share their suggestions and ideas is a critical factor leading to organizational success.

“The biggest difficulty is winning over the hearts and minds of staff when bringing in organizational change.”

Organizations such as Sony, Yamaha, Rubbermaid, and Wainwright Manufacturing focus their operations solely on the ideas and suggestions of their workforce.

Unfortunately the data from the Libyan interviewees shows that employees are not sufficiently involved during the commencing of quality programs in most of the Libyan organizations, which means that issues affecting employees are not being given appropriate attention. This, in turn, has serious implications for the success or failure of the TQM implementations.

The above mentioned barriers and other barriers such as lack of continuous improvement and motivated team work, lack of measurement and reliable information, lack of partnership with suppliers, are representing a real threat to any quality initiatives for any organization planning to transform its operation towards quality management systems.

The researcher believes that whenever there is a lack of complete commitment of the senior management team, this would be followed by a lack of employees' involvement, and without commitment and involvement no organization can advance in implementing any sort of quality initiative. The top management should move from the past authoritarian, and control styles to a much more open-minded style. They also

need to educate themselves and their employees and motivate them in order to bring their potential to a full capacity to implement the quality initiatives.

According to Kotter (1995), The success of TQM depends largely on management's ability to lead the organization's quality transformation. In addressing why there is a lack of top management commitment, Dr. Kotter identified eight common management errors:

- Not establishing a sense of urgency;
- Not creating powerful enough guiding coalition;
- Lacking vision;
- Not communicating the vision;
- Not empowering others to act on the vision;
- Not planning for short-time wins;
- Not consolidating improvement and producing more change;
- Not institutionalizing new approaches.

7.4 TQM Barriers in UAE Companies

The UAE companies have a unique experience of implementing quality initiatives where government encouragement and top management commitment and support were the main drivers of quality movement. Authorities are seeking to develop people who can design and implement changes that have a significant impact on the quality of products and services. The continuous support came from the highest level of Government, as it appeared from the message of Sheikh Mohammed Bin Rashid Al Maktoum, Crown Prince of Dubai, Defense Minister, and the U.A.E. Chairman of the Department of Economic Development, as follows:

“The Competitiveness of local companies, against world class standards and businesses, is one of the critical components in the accomplishment of our strategic Development Plan. The Dubai Quality Award remains the single, most important tool that a company can use to develop this type of business performance and, thereby, contribute to its own growth as well as to the growth of the local economy.”

During the interviews the researcher heard many stories of how a top manager, upon returning from a major learning experience, enthusiastically went about introducing QM to the workforce.

“None of this would have been possible without top management commitment. As I mentioned before, the managing Director (GM) was following the activity of quality programs day by day until the quality became a daily routine in the company. All top management made a good effort to reach where we are now. Today, The quality steering group is monitoring the quality polices and quality improvement projects.

The UAE top management in manufacturing organizations expressed a high commitment to quality management. Managers were knowledgeable and had strong quality awareness, and were willing to take responsibility for quality improvement; their role model has served as an example for employees. The positive actions and attitude towards quality has resulted in increasing employee commitment to quality management, as was declared by one of the UAE managers:

“Every employee in the organization should know how he fits in the big picture, that is the first step to create quality culture in the company. It depends on policy deployments, awareness, participation, communication, recognition and rewards, which all creates the quality culture, and builds up feelings of belonging. When top management take care of this, and take care to create quality culture, the employees will take care of the company. And this is what is reached, by strong support of our top management and I hope to sustain it.”

According to Kanji and Tambi (2002) “leadership” is central in all TQM implementations and seems to be the most critical factor for its success. Underpinning strategic quality management concepts and principles, and TQM-driven models, such as the EFQM excellence model, is the premise that leadership through processes is required if excellent performance results are to be delivered

Surprisingly UAE did not face strong barriers preventing them to implement quality initiatives starting with ISO 9000 and others techniques and tools and not ending by gaining and winning quality award but trying hard to sustain what they have reached in a very highly competitive environment

“Because of the strong commitment of the management we did not face many problems, only documentation was not very easy, and determining the

core processes for every unit. Also there were some disagreements or conflicts during the early stages of auditing which was a result of miscommunication between employees and auditors. Now the employees and supervisors do not panic from the auditing process but they are taking it as a routine job and a good chance for improvement.”

“Creating quality culture was the main potential barrier during the early stages of implementation. But with the management consistency and support we created a health environment for whole organization involvement.”

UAE managers and employees on all levels are confident and empowered to cope with obstacles as a part of ordinary organization life and if they need support it's always there.

“Our top management see quality barriers as a chance to consolidate our systems and opportunity for process improvement. Obstacles teach managers on all levels and their subordinates to learn about what needs to change.”

Because of the high international competition in the UAE manufacturing environment, business success is a moving target and UAE must get better and better each year at providing products and services to stay in a good competitive position.

“We must constantly re-evaluate and improve our processes so that we can anticipate the constantly evolving needs of our customers.”

Sustaining quality improvement is the big challenge for UAE manufacturing organizations. They have to change every day to cope with market demands.

“We have to manage business constraints; define lean production activities; reduce time to production; manage product profitability; provide tools for better technical and managerial decision and, support production facilities design.”

UAE companies are using different tools and criteria such as Six Sigma, SPC, balanced score card, to measure their processes and performance to fulfil and exceed their customers expectations, as was quoted below:

“Our customer feedback is giving testimony to our TQM success. As we continue on our quality journey, we look forward to exceeding our customers' expectations by delivering the highest quality solutions at the lowest possible cost.”

For Libyan companies to improve their performance and do better whilst implementing quality initiatives, the barriers above should be analyzed and eliminated by increasing the awareness and understanding of the principles of TQM. They have the chance to study the UAE manufacturing companies' experiences and learn from them.

An organization should be basically healthy before beginning TQM implementation. Chronic barriers within the Libyan companies, although they seem to be difficult to overcome, are not impossible. The key to successful change is to believe that change is needed and it could happen as it has happened before in other developing countries, such as Malaysia, Korea, Turkey and Dubai. For this to happen a rigorous plan is needed to eliminate these barriers and prepare the ground by educating the top management who can take up the challenge and lead the transformation of the Libyan companies through the full involvement of every employee by empowering them to take the responsibility for improving their organizations.

7.5 Summary

Qualitative analysis was carried out using both content analysis and quotation comparison to compare Libyan companies implementing QMSs with UAE Dubai quality award winners to investigate the barriers and find the best practices to transfer the Libyan organizations from a traditional management style to a TQM organization style. The results of the qualitative and quantitative analyses are then combined at the interpretive level of research. The intention of the survey results and analysis is to provide a starting point to design a framework for the Libyan organizations to adopt and adapt, in order improve their performance and competitiveness in the future.

The next chapter (8) will present the discussion, findings and proposed TQM framework for Libya

This Chapter summarizes the key project findings on the status of TQM in Libyan process and manufacturing companies. It also introduces the framework proposed by the researcher to advise Libyan companies about the best TQM practice and the pitfalls experienced by others.

Chapter 8

8 Discussion, Findings and Proposed TQM Framework for Libya

8.1 Introduction

The intention of this research was to evaluate the approach of Total Quality Management, and to establish how Libyan companies could benefit from this approach to improve performance, increase productivity, reduce costs and improve customer satisfaction, enabling them to compete locally and internationally. The results of the literature review were presented in Chapters 3 and 4 and helped in identifying the research problem and the underlying constructs (critical success factors) essential to successful TQM implementation as was elicited by different quality professionals (Table 4-1). Those factors were compared with the Libyan managers' opinions and modified to suit the Libyan context. Eight critical success factors were chosen by the researcher to be considered as the basis of a conceptual framework to investigate TQM implementation in Libyan companies (Table 4-2). Both quantitative and qualitative data were collected and analyzed in order to fulfil the research objectives and answer the research questions. Findings that came to light

from the data analysis results were discussed in chapter 7 and will be more defined in this chapter.

In this chapter, section 8.2 presents the findings relating to the research problem which were answered by the (quantitative and qualitative surveys). Section 8.3 will then introduce the best practice framework proposed by the researcher for TQM implementation in the Libyan context. Section 8.4 will explore the four phases of the proposed quality model and section 8.5 will summarize the whole chapter.

8.2 Research Findings

Findings relating to the research questions

As was presented in section 1.3, research question one:

Q 1 *What is overall business performance within TQM? How is TQM implemented in other parts of the world and why has it progressed in some countries and organizations and failed in others?*

This research question was answered by looking at others' experience in developed and developing countries, in order to benefit from the best practices in the TQM implementation journey. The most important findings were identified as follows:

- There is no single definition of TQM. Quality professionals provide the core assumption as discipline and philosophy of management aims for long-term success by focusing on continuous improvement, through employee involvement, to ensure internal and external customer satisfaction using special methods and tools. TQM seeks to integrate all organizational functions (marketing, finance, design, engineering, and production, customer service, etc.).
- TQM does have a significant and positive effect on business performance, operational performance, employee relations and customer satisfaction. (Gao, 1991; Garvin, 1988; Hendricks and Singhal, 1997; Wrolstad and Krueger, 2001; Zairi et al., 1994). Managers need to realize that TQM will not produce

significant results unless the commitment from management and employees is sustained over time.

- In response to globalization, World Trade Organization (WTO) regulations and the concept of bringing down barriers to trade, organizations and governments can no longer perform their functions following bureaucratic rules and with inadequate resource planning or inefficient managerial approaches. They are challenged by the need for better quality of products, services, improved performance standards and greater responsiveness. Most Libyan companies are not prepared for these challenges of the new globalizing world.
- TQM has developed in many countries into an holistic framework (e.g. national quality or internationally recognized awards such as the Deming award, MBNQA and EFQM) aimed at helping organizations achieve excellent performance, particularly in customer and business results.
- There is no single or best way of implementing TQM or moving to better quality approaches. Indeed, there are many different methods for achieving quality management within an organization: ISO, Total Quality Management (TQM), Six Sigma, Hoshin, Kaizen, Benchmarking, and Best Practices. Organizations are different in terms of their vision, mission, strategies, people, structure, culture, products, services, technologies, processes and operating environments and as such should combine their uniqueness with a model which can be adopted and, consequently, develop their own ways to excellence.
- In those developing countries (e.g. Singapore, Malaysia, Taiwan, Dubai) which have introduced quality management as a competitive advantage, government has provided facilities and a policy environment (e.g. privatization, physical infrastructure, institutional support and formulation of coherent policies) to support the transformation and enable entrepreneurship.

Without political ownership in terms of commitment to the process, policy reforms could not be sustained.

- While ISO 9000 is a good framework for quality assurance, only if it is implemented efficiently and effectively can it help establish TQM in any organization.

The research question 2 as it was presented in section 1.3:

Q 2 *What are the critical success factors for implementing TQM?*

From an extensive review of the literature in the field of total quality management, critical success factors are just that – factors that have to be achieved in order to stand any chance of success. Many survey studies have been conducted in which the critical factors of TQM were extracted. Although there are similarities between the factors found in different studies, the list of critical factors of TQM varies from study to study, see table (4-1). Of course, there may be a number of reasons for this such as the content of the questionnaire used, and the type, size and the location of the companies surveyed.

In this study, which aims to measure the level of TQM implementation in Libyan companies, eight factors of TQM implementation were identified. The detailed explanations of these factors and the set of practices that support their implementation were described in table (4-2)

8.2.1 Findings related to the research problem. (Libyan context)

The main findings arising from research questions 3 in section 1.3,

Q 3 *What is the current status of implementation of quality initiatives in Libyan companies and what are the difficulties and barriers facing them?*

The current status of implementation of TQM in Libyan companies and the difficulties facing them in the implementation of quality initiatives are presented below as they relate to the Libyan context:

- From a statistical analysis of the data gathered from 283 managers in Libyan companies, table 6-15 shows the mean scores, standard deviation and the level of TQM implementation in the Libyan companies. The analysis of the interviews with the Libyan managers supported the data gained from the quantitative analysis. This suggested that TQM has not been successfully implemented in the Libyan environment mainly because of a lack of knowledge of modern management and quality approaches, especially at top management level.
- There is a clear lack of national vision for the quality movement and no emphasis on improving quality or standardization in the process and manufacturing sector. It was obvious that considerable effort was needed from the Libyan top decision-makers to emphasize the importance of quality for the whole country and to enforce some legal issues to make the importance of quality accepted by manufacturing and other sectors.
- The lack of top management commitment to, and the incompetence of top and middle management in, quality management has negative consequences such as lack of employees' involvement, lack of incentives and motivations, inadequate resources, employee resistance to change, inadequate performance evaluation, lack of customer care and a lack of continuous improvement.
- Bureaucracy is the greatest day-to-day problem facing Libyan companies. In Libya authoritarian and bureaucratic management styles have been impeding more participatory and quality conscious organizational culture.
- Quantitative analysis, Table 7-5 and qualitative analysis (section 7.2.5), showed that the Libyan manufacturing organizations do not give much

attention to their processes. None of the Libyan organizations were using an appropriate process management approach or any improvement tools.

- Quantitative analysis (table 7-6) and qualitative analysis (section 7.2.6), showed that most of the Libyan organizations have spent some time and money on training programmes, especially technical training. The training content, timing, length and methods were not well designed to cover the real training needs and there were no solid objectives to fulfil the organizations' strategies.
- Most of the line managers and middle managers involved in the study have not received formal quality management training which was only oriented to the group of employees who were following the ISO 9000 implementation. Training for all levels of an organization is of fundamental importance and must be provided continuously.
- The generally poor educational system in Libya in which quantity was favoured over quality in the process of eradicating illiteracy produced an unskilled worker force requiring extensive on-the-job training. This can drive up training costs and render TQM implementation quite expensive.
- Quantitative analysis, Table 7-7 and qualitative analysis (section 7.2.7), showed clearly that employees are not sufficiently involved in the Libyan manufacturing sector's daily decisions. The Libyan interviews clearly show that employees are not sufficiently involved at the outset of quality programmes in most of the Libyan organizations. This means that issues affecting employees are not being given appropriate attention and this has, in turn, serious implications for the success or failure of the TQM implementations.
- A lack of open communication can cause much uncertainty, fear and misunderstanding, and initiatives should be introduced to remove any

communication barriers. Workers should be encouraged to express their views at different forums without any fear of reprisals.

- Libyan companies tend to be managed by gut feel with most of their decisions based on opinions rather than on a well-defined approach or the analysis of collected data (Table 7-8). The researcher's experience suggests that many Libyan companies control information to cover up vital mistakes or bad decisions to protect themselves and show only the positive side of their internal operations.
- Both quantitative Table 7-9 and qualitative analysis (section 7.2.9), showed that none of the Libyan organizations undertook any sort of partnership with their suppliers or tried to open any communication channels to improve quality or reduce cost, it being a rigid technical relationship. They had to conduct 100% inspection for purchased materials in the stock yard in order to ensure specified quality levels. Wrong orders and out of spec materials were always causing delays and problems to maintenance and production units.
- From the questionnaire feedback Table 7-10 and from analysis of the interviews (see section 7.2.10), it was clear that Libyan companies are still running under traditional management principles where every process is considered as a routine job repeated for so many years according to the vendor's manual with nobody being allowed to change any procedure.
- Quality initiatives and practices in Libyan companies are still in the early stages and most of companies interviewed were proceeding with quality improvement programmes without a well-defined quality vision and objectives. ISO 9000 was introduced to some companies in the late 1990s and the first Libyan company was certified for ISO 9002 during the year 2000. This makes it difficult to judge Libyan companies' improvement initiatives.
- An important barrier affecting every Libyan organization is the low level of salaries for all employees. The salaries of employees in the public sector are fixed by Government and have not changed for 25 years. Because of the low salaries and levels of recognition there is a low level of motivation, and the

Libyan companies are starting to lose their experts and engineers, to the benefit of the Gulf area organizations (Dubai, Qatar) and foreign companies, who are in much more advanced stages in implementing many quality approaches such as TQM, Six Sigma, ISO 9000. Table 8-1 compares Libyan companies, which still have a lot to do to establish quality management, and UAE companies which are successful in quality (recognized champions and won a Dubai Quality Award).

Table 8-1: UAE companies/Libyan companies comparison

UAE Companies (Dubai quality winners)	Libyan Companies (new quality practitioners)
Professional leadership	One boss
Measures taken are based on facts	Measures taken are based on opinions
Activities focus on results	Activities focus on capacity production
Action taken	Talking only to please stakeholders
Customer focus	Production orientation
Quality activities embrace all functions and levels	Quality activities (if available) concentrated on certain parts of organization
Everyone trained in quality	Only quality committee trained in quality
Persistent and systematic work towards identified goals	Simple targets requiring no effort
Long-term view	Short-term view
Chronic problems dealt with systematically	Only sporadic problems dealt with, i.e. "fire fighting"
Preventative measures to avoid problems	Problems dealt with as they arise
Involvement and participation	Each one works for himself or herself

From table (8-1) it is shown that there are clear differences between Libyan companies and the UAE companies in quality maturity levels. UAE companies are more committed to quality efforts and have more experience. Libyan companies need to improve their standard of management before they start the TQM journey, and they can benefit from UAE experience, and save money and time.

The following sections 8.3 answer the fourth research question:

Q 4 *What kind of TQM implementation model should be developed in order to guide Libyan process and manufacturing companies in implementing TQM?*

8.3 Framework for Libyan Companies

In order to gain and sustain competitiveness in the global market, Libyan companies need to transform their traditionally bureaucratic style of management to a high value-added and proactive one. For such a transformation the adoption of effective quality strategies and practices is considered as one of the crucial factors for success. The shift from traditional management to a TQM culture is revolutionary and should come after profound thinking about what is involved during every stage of the transformation.

8.3.1 Creating Culture of Change

Organizational change often requires cultural change to achieve a flexible, dynamic, and adaptable environment, where all organization members participate in problem solving, value adding results and corporate success. (Morgan, 1997). This is where Total Quality Management makes an impact. However, to be successful in the introduction of TQM, many attitudes need changing, thinking developed and perceptions broadened. As a result standards can be set and organization-wide commitment and continuous improvement realized. The necessary changes will not happen without planned, purposeful action.

Changing the attitude or the behaviour of people in the traditional bureaucratic organization is often difficult and faces resistance. Therefore, there is a need for the

Libyan leadership management to lead the organization through the quality transformation process by demonstrating its own willingness to change. They must constantly talk about the shared vision, principles of customer service and quality management, mission and goals of the organization. Managers must serve as coaches to build and lead quality teams.

The ultimate purpose of changing the culture is to implement desirable values in the company. This is achieved through empowering the workforce to such an extent that they have clearly defined expectations, responsibilities, and levels of authority, resources and skills.

For any organizations to build a culture of change, they must take into account several requisites, as suggested by Schein (1992).

- The organization must be proactive, not just reactive;
- The organization must influence and manage the environment, not just adapt;
- The organization must be pragmatic, not idealistic;
- The organization must be future-oriented, not predominantly present/past oriented;
- The organization must embrace diversity, not uniformity;
- The organization must be relationship-oriented, not just task-oriented;
- The organization must embrace external, as well as promote internal, connectivity;

The failure of top management and their employees to address the culture of an organization, or a significant part of it, is one of the most dominant reasons for management initiatives failing. Understanding the culture of an organization and using that knowledge to map the steps needed to accomplish a successful change, is an important part of the quality journey.

8.3.2 TQM implementation Framework

In order to successfully implement TQM, a systematic approach is needed to develop a framework or a roadmap (Dale et al., 2001; Kanji, 2000; Yusof and Aspinwall, 2000b). The framework should be simple, logical and yet comprehensive enough for TQM implementation. The development of a sound implementation framework is crucial and should be one of the first things to be done before embarking on TQM.

Aalbrektse et al. (1991) define a framework as being *“a clear picture of the leadership goal for the institution and should present key characteristics of the to-be style of business operations.”* They also mentioned some reasons why a framework is needed

- To illustrate an overview of TQM so as to communicate a new vision of the organization;
- To force management to address a substantial list of key issues which otherwise might not be addressed;
- To give an insight into the organization's strengths and weaknesses;
- Most importantly, to support implementation and to improve the chances that TQM adoption will be successful.

The development of the quality model for this research was based on the comprehensive literature review and comparison of best practices frameworks which were successfully implemented in similar cultures such as Dubai, Pakistan, Turkey and Saudi Arabia. It was also based on the research findings from the questionnaire survey conducted among the Libyan companies and the interviews with Libyan and UAE quality professionals. A blending of the salient feature of these frameworks provides the best approach for the development of a best practice framework for implementing TQM in Libyan companies see Table (4-1).

8.3.3 Tailored Model

The results from quantitative analysis and experience of the organizations studied indicated that TQM has not been successfully implemented in the Libyan environment mainly because management understanding and commitment to the quality approach has been inadequate with no commitment from top management and no indication of employee involvement. This indicated a traditional, bureaucratic management style. To change this situation, Libyan companies should look for a way of developing best practice approaches to support the transformation to better performance. This cannot happen by chance; it should be planned. Most of the quality professionals and practitioners agree that leadership is the single most important factor influencing the successful application of quality management principles, as mentioned by Deming (1986). *“A company can’t buy its way into quality – it must be led into quality by top management.”*

TQM implementation models developed from Western society may not suit other societies due to the differences in social structure, economy, and way of life, specifically cultural values (Mossa, 2001). Individuals from different countries have different values, beliefs, and attitudes that are influenced by their cultural background. There is no “right formula” for implementing quality management, but the local context will have a major influence on its implementation. The proposed model, section (8.4) provides users with a number of practices, drawn mainly from the survey findings and from the practical international experience of companies in developing countries who have implemented TQM and succeeded.

8.3.4 The Purpose of the Proposed Model

The purpose of this TQM roadmap, as presented in section (8.4), is to bring an attitudinal change to Libyan companies and to set the direction for the implementation of quality initiatives in all spheres of business activities. The process of implementation of this model is expected to work faster and more efficiently if there

is strong commitment from both top management and employees. The simpler the process used, the better it works.

8.4 A Roadmap for Implementing TQM in Libya

The roadmap presented in this framework is designed to help organizations get started and continue with the transition to full TQM. It serves as a guideline for implementation of TQM in the Libyan environment which is unique with the country having been a 'closed system' for thirty years. As a result Libyan companies have suffered from a lack of vision, poor leadership, waste of expensive resources, have ignored the potential of human resources as an important agent for change, ignored customers, and insisted on avoiding modern approaches to management as one Libyan expert stated:

"I believe that the cause of Libyan organizations' poor performance is the failure of Libyan managers to realize that there is a different way to manage their organization – a way that yields better quality, higher productivity, more jobs and ability to survive the competition."

Nowadays after the country has opened its doors to the open market system and has started negotiating to join WTO, Libyan companies have found themselves to be in a critical position due to international competition. Libyan companies urgently need a large-scale radical change and transformation in the way business is done, particularly in the areas of standardization and quality management. It has become evident to many of the companies affected that they have soon to move towards quality improvement. Adopting the quality proposed model requires a significant change in organizational culture and management philosophy. Moving from one phase to the following one depends upon the harnessing of knowledge and expertise gained during the previous phase and fulfilling each phase assessment criteria.

The proposed framework consists of four phases and is designed to help Libyan companies get started and move step by step towards TQM culture. Figure 8-1 shows the four phases of the proposed model.

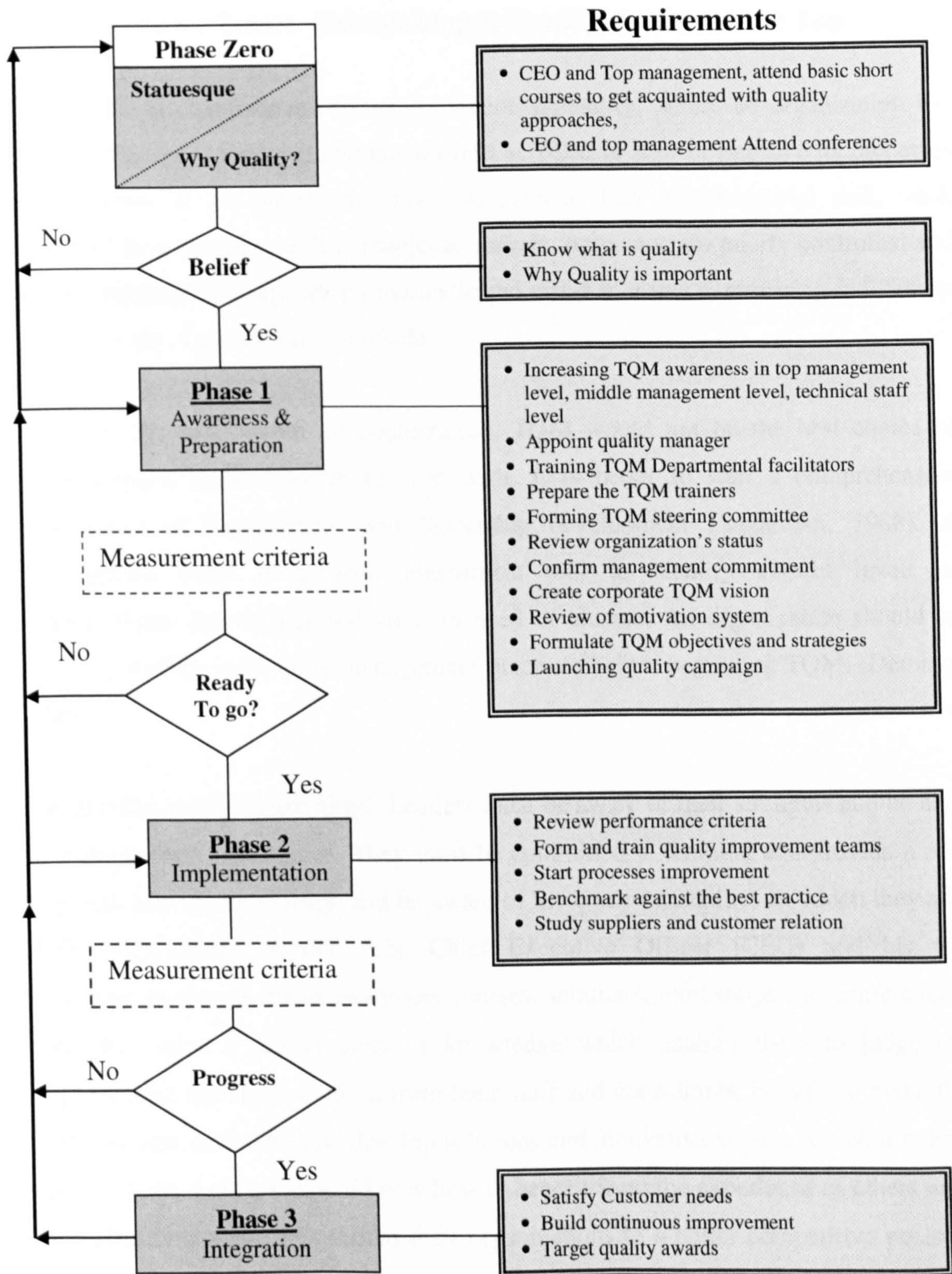


Figure 8-1: The Phases of the Libyan quality framework

8.4.1 Phase 0 (Zero): Establishing A Quality Culture at the Top

This phase is characterized by an inspection mentality: where an organization has been traditionally managed and has no skill at TQM or how to improve its processes and systems. It has significant problems such as lack of managerial skill, weak administrative systems, or low employee morale, processes are poorly controlled and the ultimate success depends on the dedicated effort of a few enterprising individuals instead of the organization as a whole.

If this is the case within an organization, TQM would not be the best choice of organizational transformation to start with. It is better to start a comprehensive programme of management and leadership development (Sugarman, 1988). A management audit is a good assessment tool to identify current levels of organizational functioning and areas in need of change. An organization should be basically healthy in its daily management practices before beginning TQM. (Deming, 1986).

Leadership requires learning: Leaders must be aware of their strengths and be able to manage their weaknesses. They must be committed to learning and provide a role model in seeking knowledge and be aware of the complex realities in which they and their organizations operate. The Chief Executive Officer (CEO) and his top management should attend awareness courses, seminars, workshops and conferences, until they have a certain level of knowledge which enables them to judge the improvement initiatives coming from their staff and consultants, be able to make the right strategic decisions, and develop solutions and innovative approaches within their organizations. Leaders should know how to benefit from the experience of others who have already successfully shifted their organizations to a better competitive position by adopting and adapting TQM. To sustain quality and be competitive, leaders should create a learning organization in order to harness the collective intelligence and commitment of individuals at all levels of the organization (Drucker, 1992; Heifetz, 1994; Senge, 1990). Before committing themselves, top management must thoroughly understand the principles of TQM or any other quality management system they are looking to implement. TQM cannot exist without this complete acceptance and once it is in place then different systems and tools can be initiated to propagate and facilitate

a culture based on such a philosophy. Figure 8-2 shows the output expected from phase Zero

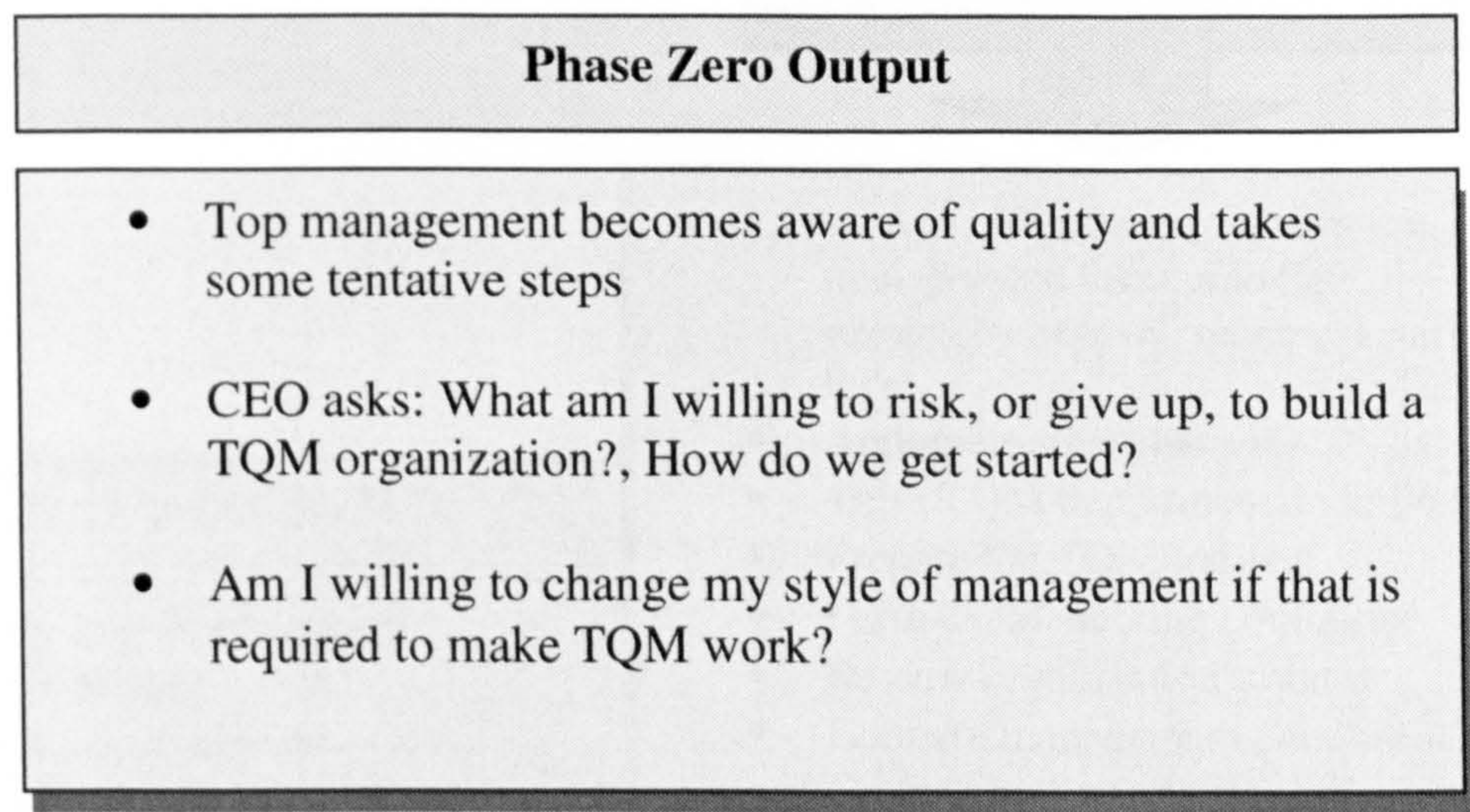


Figure 8-2: Phase Zero output

8.4.2 Phase one: Awareness and preparation

Phase one is a waking to the potential of TQM. The objective at this stage is for top management to develop and document a vision of improved quality, along with a strategic quality plan. This represents the most critical phase of this model and requires the implementation of the three most critical factors for TQM implementation in a Libyan context: top management commitment, employees’ involvement and motivations system. Figure 8-3: shows Phase one requirement.

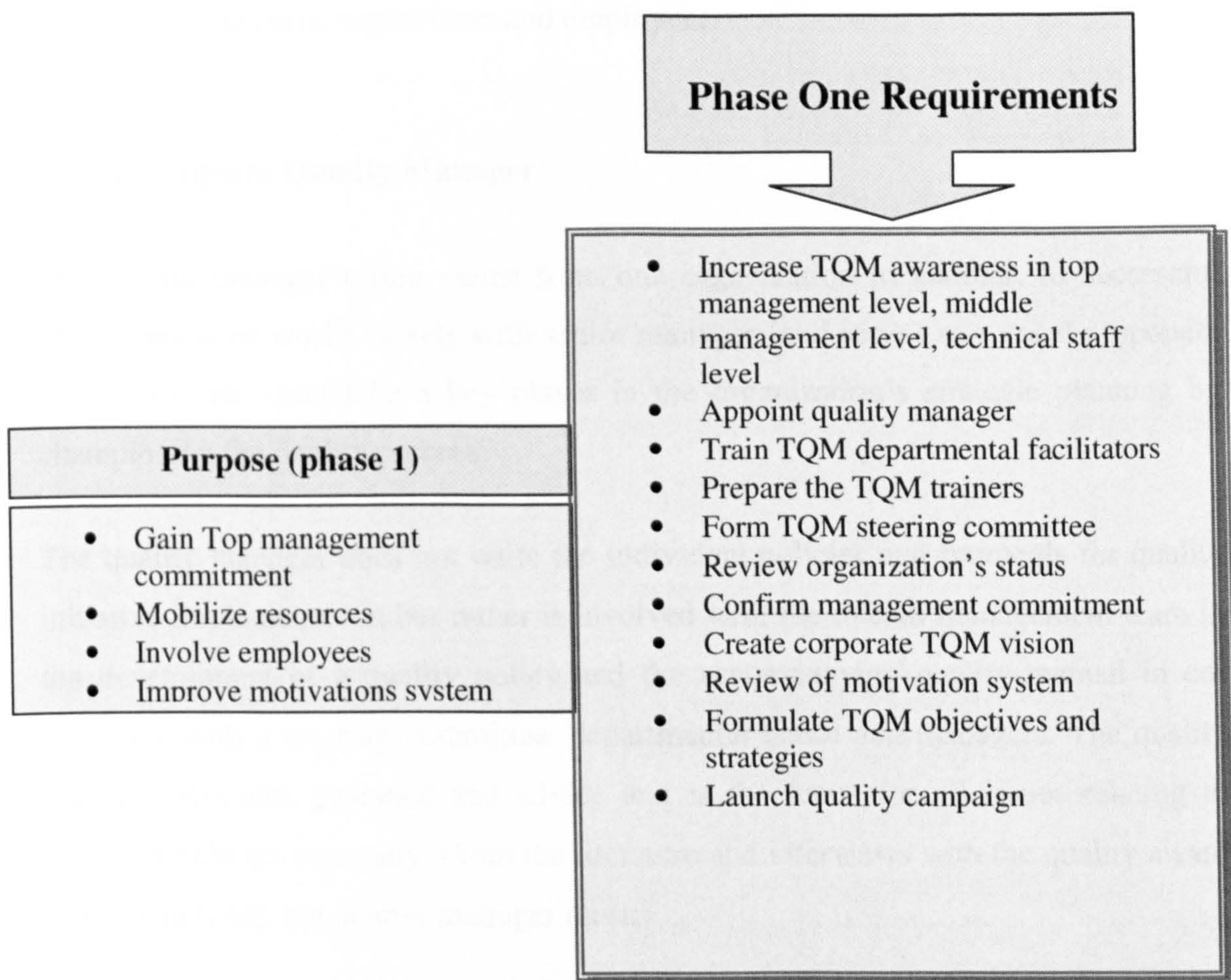


Figure 8-3: Phase one purpose requirements

8.4.2.1 A Formal Quality Awareness

CEO, top management, quality manager, middle management, facilitators, trainers, start a formal quality career development – no one can escape this stage. It was always the case during the quality initiative introduction in the Libyan companies that top management did not attend the training sessions, section (7.2.3) The CEO and top management in this stage should personally follow the progress of the awareness period including awareness training. The more the CEO and top management become knowledgeable of TQM principles, techniques and tools (attending conferences, short seminars, training sessions) the more the quality initiative progresses through the

implementation phase. Top management should cascade the training activities to the lower level managers, supervisors and employees.

8.4.2.2 Appoint Quality Manager

The quality manager's role varies from one organization to another. In successful organizations he works closely with senior managers and serves as a vocal proponent for quality. He should be a key player in the organization's strategic planning by championing the quality process.

The quality manager does not write the individual policies and protocols for quality initiative implementation but rather is involved with the overall management team in the development of a quality policy and the accompanying quality manual in co-operation with a steering committee, departmental heads and managers. The quality manager provides guidance and advice and is the focus for all issues relating to quality within the company. From the literature and interviews with the quality award winners in UAE, the quality manager must:

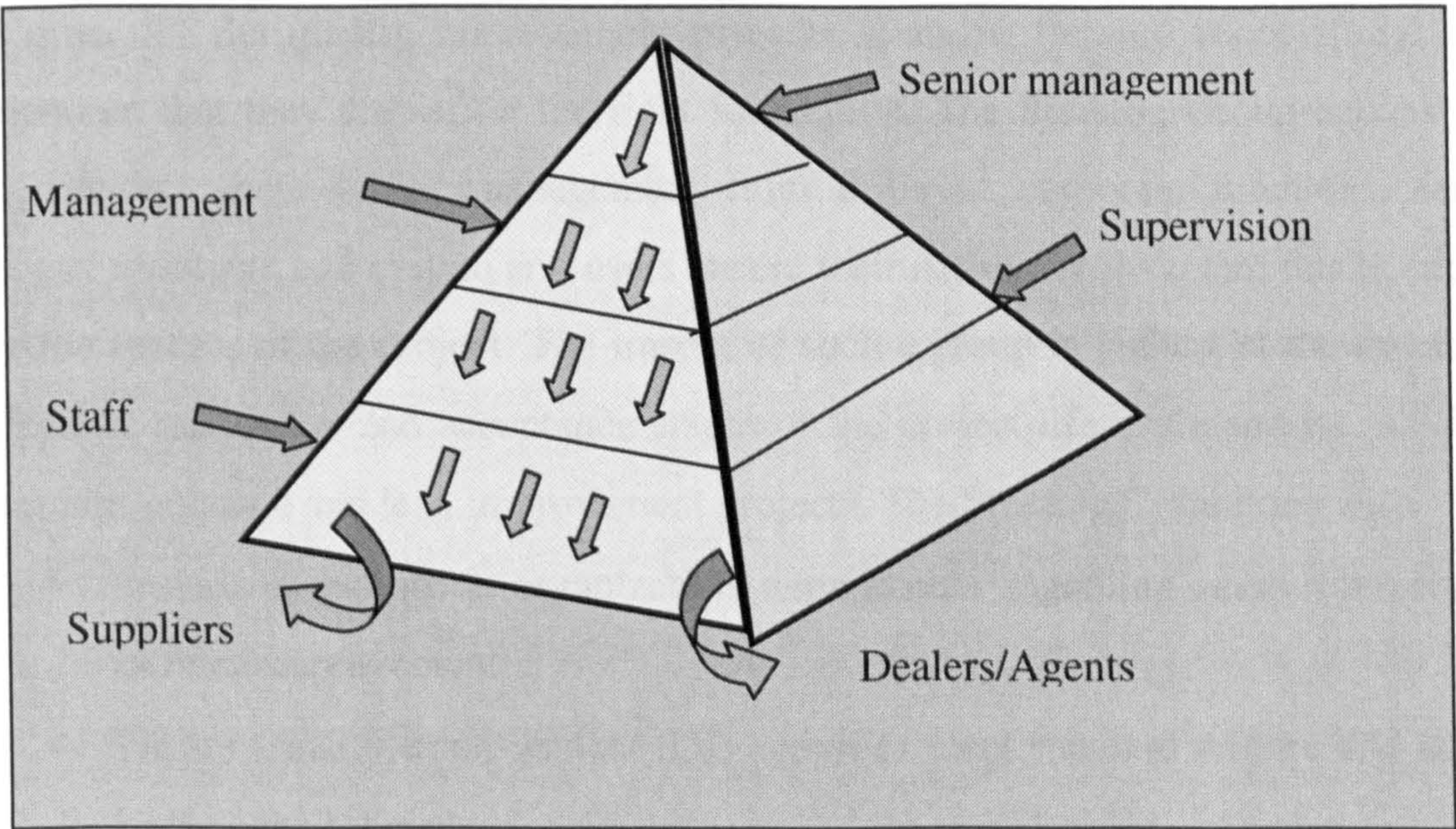
- Have relevant knowledge on quality management systems, methods and tools and be willing to learn from others;
- Have a lot of energy and initiative;
- Have excellent skills in dealing with people and facilitating meetings;
- Be well respected by senior managers and front-line employees;
- Ensure that an effective document control system is in place and operational.

8.4.2.3 Consolidated Training

Once top management had decided to embark on the quality journey, the fastest moving activity would be the provision of training. This is especially relevant to large organizations where different teams could start their training programmes in parallel. Depending on the diversity and amount of training required, the cost could be very high and this could hinder or delay the quality journey. Large organizations can avoid this by getting the most out of their experienced people in different disciplines

operating at different levels and training such personnel to train others thus reducing the cost of training. The introduction of various incentives might support this additional role with corresponding implications for cost and communication. For example improving the respect and trust between the trainees and their trainers will encourage the building of expertise in every field of the organization's activities.

The organization should aim for most of the training to be carried out by its staff, so the first step is to train the trainers. The training should be across the hierarchy and cross-functional. The process should start with top management staff, cascading to the front-line managers/skilled workmen. Figure (8-4) shows how training should be cascaded from the top down.



(adopted from P.A. Management)

Figure 8-4: Quality cascade training

8.4.2.4 Facilitators and Improvement Teams

Facilitators, leaders and team members must be properly trained in team skills and problem-solving tools and techniques. Team training is regarded as the most significant step and the most necessary element of team effectiveness and success (Calisir et al., 2001; Thiagarajan and Zairi, 1998). Team building skills are needed to develop the necessary climate and culture that values shared decision making.

In cascade training, middle management has an important role to play. One of the most effective ways to gain the support of managers is to first evaluate their accumulated experience, train them in quality principles and techniques, and then train them as instructors (training the trainer courses). This will let them discover their own capability and the value of their experience. The researcher's practical experience suggests that when someone trains other personnel they become more informed with up-to-date knowledge. In consequence they become confident about training the people for whom they are responsible and ensuring that their own commitment is communicated.

8.4.2.5 Forming TQM Steering Committee

In order for the quality improvement projects to move forward successfully, it is important that they are set on the right foundation. The Steering Group acts as that foundation, where senior management from different corporate functions, senior project managers and system end users ensure their active involvement; this is critical for the success of the project. The impact of such a group is highest at the initiation, adoption, adaptation and acceptance stages of the project life cycle and its role is to promote, enhance and lead improvement projects. The Steering Committee will:

- Provide direction to organization departments regarding areas for product /service improvement;
- Ensure Quality Improvement (QI) activities meet standard criteria and advise staff on the QI cycle;
- Allocate resources to enhance and support improvement initiatives;
- Review current practices to detect, manage and prevent deficiencies in product or service delivery;
- Ensure the involvement of all relevant stakeholders in service improvement activities;
- Develop and implement a coordinated and systematic approach to monitoring and the recognition/reward of success:

8.4.2.6 Review Organization's Status

Before starting to introduce any improvement scheme the top management should ask 'Where are we now?' compared with the desired standards (ISO 9000, ISO 14000, Six Sigma, Balanced Score Card, TQM or any other standards), Also they should at a certain stage, benchmark their organization against their competitors. The focus of this exercise is to examine the various internal and external factors which threaten the effective implementation of quality management initiatives such as politics, economic, cultures and change resistance.

8.4.2.7 Top Management Commitment

Top management commitment does not just happen; it is hard to build and sustain. It is a combination of honest participatory leadership, vision, enthusiasm, continued training and teamwork supported by the development of a recognition and reward system. A top management reception to TQM is usually positive but not supportive in the long-run. It embraces TQM without understanding its impact on the long-term or management practices of their organization and this can result in failure to effectively introduce a quality initiative. If there were only verbal support from senior management, staff soon follow with lip service to its principles rather than effective action. (Oakland, 2000; Deming, 1986).

The TQM journey should start with a firm belief and commitment to the philosophy of TQM by the top management. It requires significant changes in management philosophy and behaviours; it requires new priorities, additional resources, energy, time and consistent support. Senior managers will not provide such backing until they are convinced that the improvement programme makes sense. Quality improvement is a continuous process and should not be thought of as something with a beginning and an end. Without a strong commitment from the top to develop a healthy culture, based on fairness, respect, trust, open communication, shared information and teamwork, most organizations will not get very far in TQM. Figure: 8-5 shows the output expected from phase one implementation

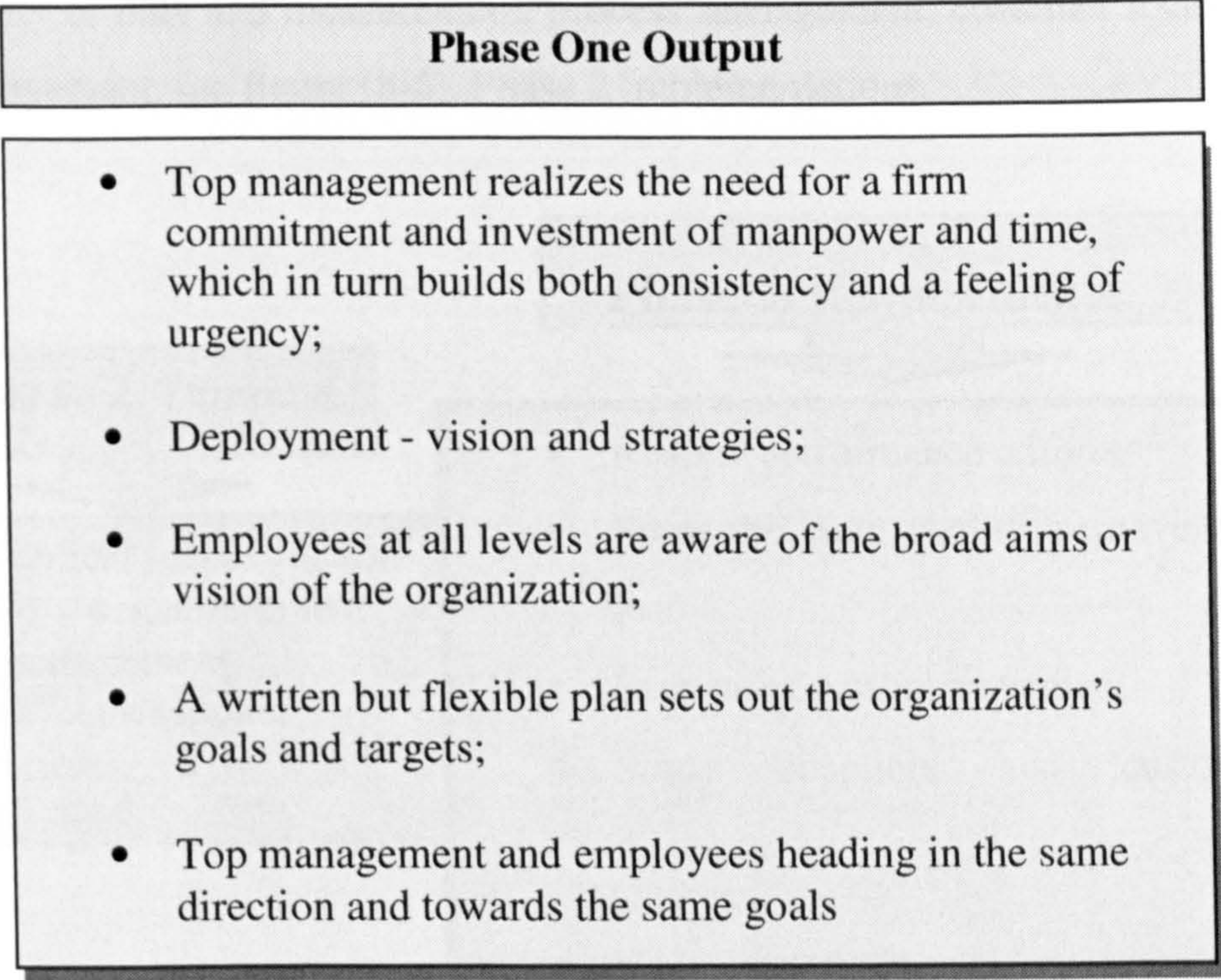


Figure 8-5: Phase one output

Once the commitment to implementing TQM has been established, it is best to start to create a corporate TQM vision, review the motivations for such a system, formulate TQM objectives, strategies and to launch a quality campaign.

In parallel with the main quality implementation plan, companies could start with small improvement projects to show results and prove the advantages of the new improvement scheme, so employees and decision makers start believing in the improvements and learn from them.

8.4.3 Phase Two: Implementations

Phase two of the framework is the starting of TQM implementation. Process measurements and improvements begin. Root-cause analysis, corrective action and quality improvement teams are first trained in statistical process control, problem solving and teamwork. These teams are then set to work to achieve the vision and strategic quality plan. This phase represents the real test of phase one and the hard work to be executed in the quality journey. It requires the implementation of the four

critical factors of the proposed framework for TQM implementation in the Libyan context: quality of data and measurement, process management, customer focus, and supplier management, see figure (8-6), Phase 2 implementations.

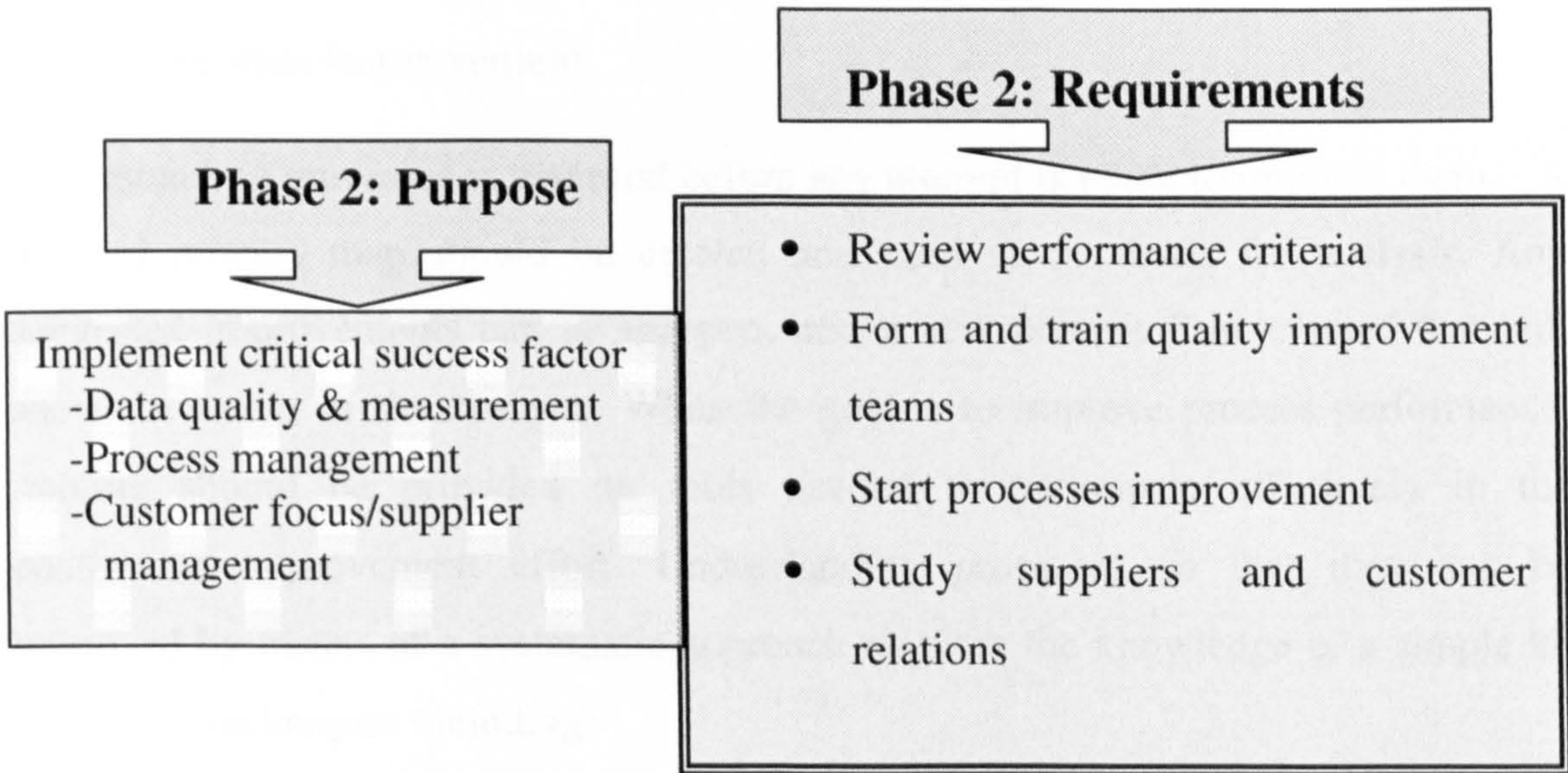


Figure 8-6: TQM Implementations in Libyan companies

8.4.3.1 Performance measurement

The main purpose of any measurement system is to provide feedback, relative to the company goals, that increases its chances of achieving these goals efficiently and effectively. Good performance measurement is essential for performance improvement: what you measure is what you get. If the company can get its performance measurement right, the data that the system generates will help to tell where the company is standing, how it is doing relative to its goals, and where the company is going.

Performance measures should be identified to monitor progress against the strategic plan. Overall business performance consists of customer satisfaction (internal and external), employee satisfaction, product quality, and strategic business performance. The organization should always use the latest information on overall business performance to compare its processes with the best practice companies in the same industry.

In Phase Two the whole organization (production, sales, administration, shipping, agents) is moving down the quality road with clear plans and performance indicators; management keeps a close watch and provides support, helping in solving problems.

8.4.3.2 Process Improvement

Understanding processes is essential before any attempt is made to improve them. A detailed process map should be created and used as the basis for analysis. Any suggested improvements can be mapped, and a new process flow created that will show the extent of the changes. When the goal is to improve process performance, training should be provided on tools needed to participate effectively in the continuous improvement effort. Understanding processes so that they can be improved by means of a systematic approach requires the knowledge of a simple kit of tools or techniques including:

- **Problem solving methodology**
 - Process mapping
 - Process flowcharting
 - Force field analysis
 - Cause & effect diagrams
 - CEDAC
 - Brainstorming
 - Pareto analysis

- **Statistical process control (SPC)**
 - Control charts
 - Check sheets
 - Bar charts
 - Scatter diagrams
 - Matrix analysis
 - Dot plot or tally chart
 - Histograms

8.4.4 Phase Three: Integrating Qualities into Everyday Activities

At Phase 3, the organization pro-actively identifies weaknesses and strengths in process, with the aim of preventing the occurrence of defects. The objective of a quality management effort is to transform the culture of the organization to one that emphasizes a commitment to excellence, a focus on customers by everyone, continuous improvement in processes, products or services, and reliance on the talents of all employees. A clear indication that an organization is making the transformation is the integration of quality management practices into the daily activities of the organization. Figure 8-7 shows the purpose and requirement of Phase Three implementation.

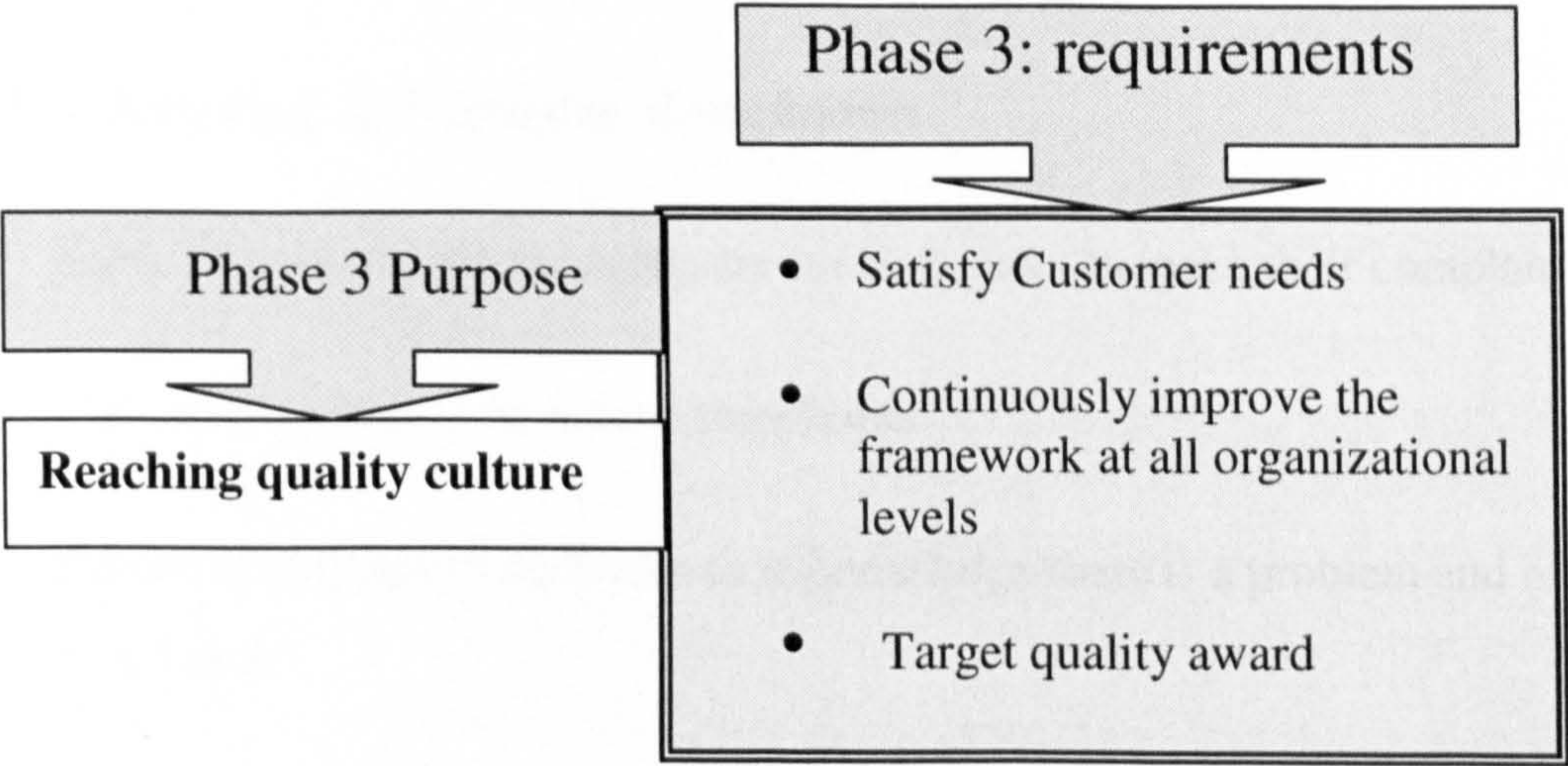


Figure 8-7: The implementation requirements of Phase Three

8.4.4.1 Satisfy Customer needs

Successful organizations continually innovate and change, based upon customer needs and feedback. Understanding customer satisfaction and the ability to meet customer expectations has a direct effect on a company’s revenue performance. It is useful to conduct customer surveys periodically to measure a change in the level of customer satisfaction. One way of measuring customer satisfaction is to obtain customer input from various channels, such as surveys, focus groups, or customer complaints, and combine this information in an attempt to get an accurate measure of customer satisfaction. Customer feedback is a very important tool for the success of a company. Once the customer feedback is retrieved, the input provided by the customers should

be carefully evaluated and used to improve the overall satisfaction level of all customers, see figure 8-8.

- **Handling customer complaint and follow-up**

The company should make sure that all members of staff have contact with customers (face to face, by phone, by written correspondence) and receive training in handling customer complaints including telephone operators and receptionists. The ability to react to shortcomings and customer complaints will lead to higher customer retention and follow-on sales, as well as increased customer loyalty. The company should invite feedback from customers on how their complaint was handled and keep a record of customer complaints.

- **Poor Handling of Customer Complaints:**

- There is no system in the company for customers to make their complaints.
- There is no a system to record complaints
- Failure of company employees to acknowledge there is a problem and offering no solution
- Transferring the customer complaints to other staff.
- Blaming the customer for the problem.
- Taking too long to respond
- Promising to contact the customer and not doing so.

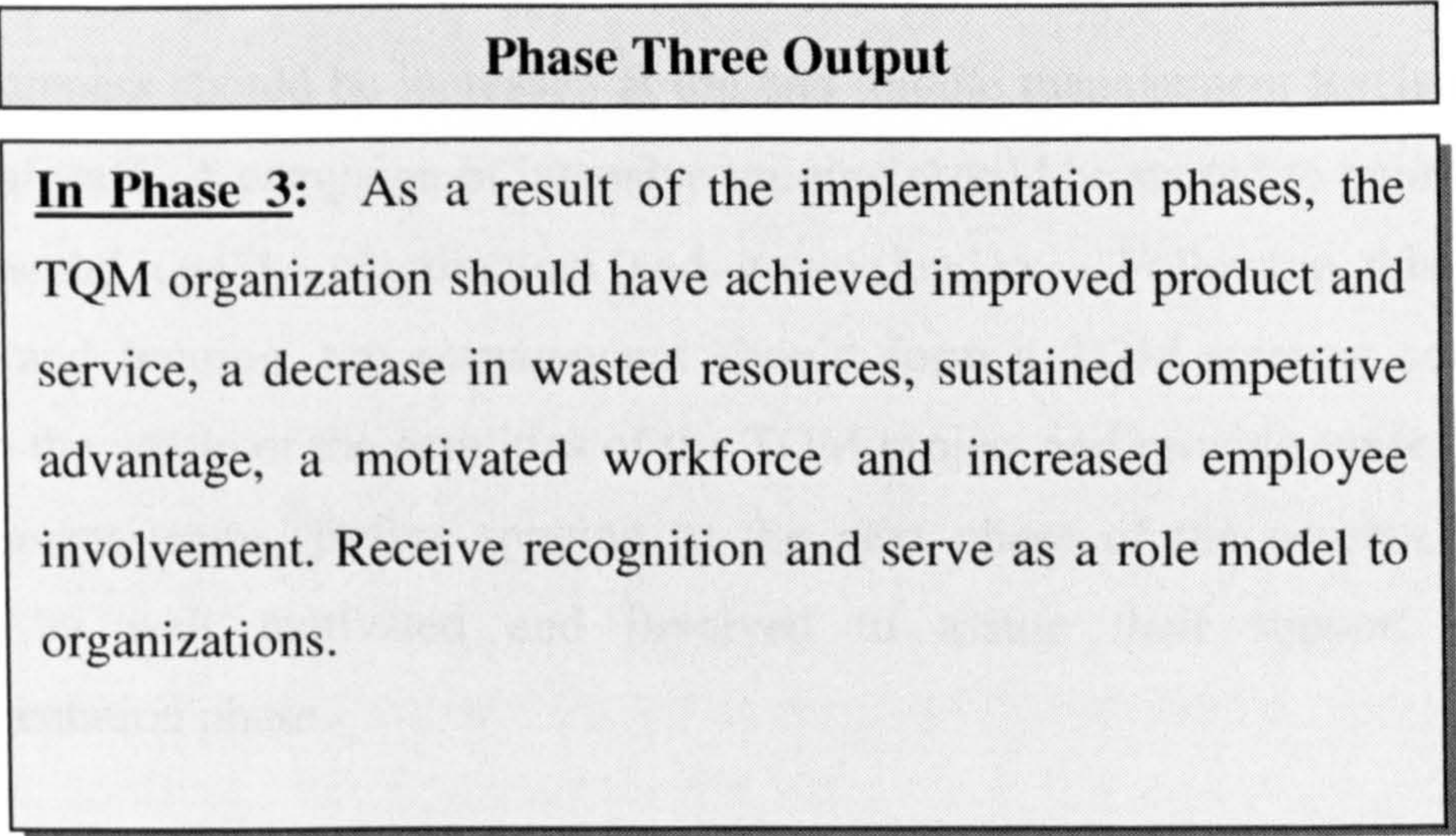


Figure 8-8 : Phase Three output

8.5 Summary

The first part of this chapter presented the main findings of the study which clearly show the poor implementation of the critical success factors chosen to test the TQM implementation in Libyan manufacturing companies. This poor implementation was mainly due to lack of top management commitment and incompetence in the process of culture leading to a lack of vision and related strategies, policy deployment, lack of people involvement and customer focus.

The second part of this chapter introduced the framework proposed by the researcher as a road map for TQM implementation in Libyan manufacturing companies and other local organizations. The framework consists of four phases. The emphasis of phase 0 was to encourage the top management to know what they are doing and where they want to go, before they embark on their quality journey, by educating themselves and exploring their knowledge of quality management systems and how they can benefit from adopting TQM or any other quality approach.

Phase one of the road map emphasised the need for top management to plan well for the journey and prepare whatever was needed to make the quality journey successful.

A quality manager should be appointed to coordinate and document these activities and awareness should be increased at top and middle management levels and among technical staff. A campaign of intensive training should be started to train facilitators, departmental quality coordinators and group leaders. Following this awareness raising and training, top management should form a TQM steering committee to manage the whole of the activities of the TQM project and provide support to quality management teams. Before moving to the next phase of the process, employees should be well motivated and involved to assure their support during the implementation phase.

After the top management has shown their commitment to the quality journey, phase two can be started to implement the other critical success factors, review performance measures and design and redesign all processes including suppliers and customer relations.

Phase three of the proposed framework should concentrate on satisfying customer needs and continuously improving the TQM framework at all organizational levels in order to effect the necessary cultural change.

Although the researcher presented these phases of TQM implementation as if they were linear and rational, he recognises that in practice activities may emerge simultaneously and in non-linear fashion.

The next chapter, chapter (9) will summarize the whole thesis and produce recommendations, limitations and Future work.

This chapter summarizes the research process, and presents the conclusions and recommendations for improving quality initiatives based on the findings from the literature review and the survey data analysis. It also presents the contributions of the study and draws attention to the areas for future work that arise from it.

Chapter 9

9 Conclusions and Recommendations

9.1 Thesis Summary

The initiative for this research arose as a result of the difficulties the researcher experienced during the implementation of quality management practices in Libyan process and manufacturing companies

The specific research problem was identified through a review of total quality management (TQM) literature, the researcher's own experience in the oil industry, and preliminary interviews with Libyan managers in the process and manufacturing sectors. The issue of quality management is becoming a necessity in the Libyan context, and is a worthwhile investment because of external and internal pressures (Najeh and Kara-Zaitri, 2004; Sayeh et al., 2005; Shembesh and Tulti, 2005). The main aim of this study was to identify the drivers and barriers to the adoption of TQM in the Libyan process and manufacturing industry and to develop a model through which Libyan companies could implement and maintain improved quality systems.

The concept of Total Quality Management (TQM) was first introduced as a statistical approach (quality control - QC) to factory control during the 1920s in the USA. This was followed by Quality Assurance (QA) and Total Quality Control (TQC), which was later introduced to corporate managers in Japan in the 1950s. Amongst the most significant factors that have contributed to the persistence and strength of the TQM model are:

- (1) Influence of the teachings and writings of scholars such as Deming, Juran, Crosby and Feigenbaum, who were the leaders of the quality movement in the second half of the 20th century;
- (2) The success of Japanese companies in taking and retaining market share from their Western counterparts in the USA and Europe during the 1980s and 1990s;
- (3) Introduction of internationally recognized quality awards such as the Deming Prize, the Malcolm Baldrige, and the European Quality Award. This concept received a further impetus in the 1980s with increasing awareness worldwide of the importance of quality.

The impact of the TQM movement on the Japanese economy has directly affected the views and attitudes of managers in the public and private sectors on quality management in the USA and Europe, and later in other developing countries. They have realized that the traditional philosophies and approaches to quality management could no longer guarantee the production of outputs that conform to the requirements of their customers (Carr et al., 1997; Deming, 1986; Lai et al., 2002; Reed et al., 1999). As a result of this, attention shifted towards TQM, which could assist them in achieving excellence. The application of TQM not only benefits the customer, in that they receive quality products, but also benefits the organization in creating a culture of quality which usually leads to cost savings and enhanced productivity (Hansen, 2001; Yong and Wilkinson, 2002).

9.2 Study Objectives

After defining the research problem in section (1.2), three research objectives were set. These objectives were:

- *To identify the critical success factors that lead to the effective implementation of TQM.*
- *To investigate the present status of TQM or other quality management systems among Libyan companies and determine the difficulties they are facing in improving their quality position, which is preventing them from being competitive.*
- *To learn from best practices and to develop an appropriate TQM model for Libyan process and manufacturing companies to create a quality culture in which to compete locally and globally.*

9.3 Research Questions

In order to investigate the study problem and fulfil the research objectives, the following questions had to be answered:

- Question 1: *What is the overall business performance within TQM? How is TQM implemented in other parts of the world? Why has it progressed in some countries and organizations and failed in others?*
- Question 2: *What are the critical success factors for implementing TQM?*
- Question 3: *What is the current status of implementation of quality initiatives in Libyan process and manufacturing companies and what are the difficulties and barriers facing them?*
- Question 4: *What kind of TQM implementation model should be developed in order to guide Libyan process and manufacturing companies in implementing TQM?*

Finally, it is necessary to review this study in light of the above four research questions:

Question 1 these were answered on the basis of an extensive literature review that looked at all aspects of TQM in order to provide a detailed understanding of the state of TQM in different parts of the world, with particular attention being paid to developing countries and their experience in implementing quality initiatives. (Dubai, Malaysia, Singapore, Pakistan, and Eastern Europe) (see Section 3.8, Chapter 3). Some successful models (Baldrige model, EFQM model, Deming prize, DQA) and other tried frameworks for TQM implementation from quality practitioners, Table (4.1) were used to help to develop an appropriate framework which suits the Libyan context.

Question 2 was answered by comparing previous empirical studies that have been validated and used as reliable measurement instruments for TQM implementation, see Table 4.1. Eight factors have been identified as being critical for successful TQM in Libyan process and manufacturing companies.

Question 3 The most appropriate research strategy to answer research question 3 was a questionnaire survey. These have been used by many quality management practitioners to measure TQM implementation (Ahire et al., 1996; Anderson et al., 1995; Morrow, 1997). The findings of the questionnaire analysis showed a low level of TQM critical success factors implementation, see Table 6.12. Also semi-structured interviews were used to benchmark Libyan companies, which still have a lot to do to establish quality management, against UAE companies which are successful in implementing quality management systems, and are recognized as champions in this field, having won Dubai Quality Award.

Further findings from the interviews with Libyan managers highlighted some significant barriers which prevented Libyan companies from improving their quality standards, see sections 7.3. These barriers should be analyzed and reduced by increasing the awareness and understanding of the principles of TQM, especially at top management levels.

Question 4 was answered by developing a TQM implementation model. The findings of this study have been used to construct a simple and practical framework which prescribes guidelines for introducing TQM in four phases and is designed to help Libyan companies get started and move step-by-step towards a TQM culture. Section (8.3).

9.4 Research Methods

The research methodology involved the use of a questionnaire with 52 questions, in order to explore the critical success factors for measuring TQM implementation levels in Libyan process and manufacturing companies see Table (4.2), followed by semi-structured interviews with five Libyan companies which were ISO 9000 certified, and five UAE companies which had won the Dubai Quality Award, in order to obtain descriptive accounts of best practices associated with these critical success factors. The overall aim of using mixed methods was to make the research findings more reliable and valid, and to reduce the level of inherent bias by comparing sets of data, i.e. “data triangulation”. After the data were collected, collated, organized and summarized, the analysis was performed using SPSS (version 11.5). Content analysis and quotations were also used to analyze and present the data from the interviews with the Libyan organizations and those in the UAE.

9.5 Conclusions

Based on the literature review, findings from the questionnaire and interview results, several conclusions can be drawn

- This study has assessed the level of TQM implementation in a sample of Libyan companies. The organizations were found to have a low level of implementation of the critical success factors due to: lack of knowledge of quality management systems, methods and tools; lack of top management commitment which caused a lack of vision; poor strategic competence and employee involvement; and, a lack of measurement.

- The research revealed that the quality initiatives and practices in Libyan organizations are still in their early stages, and that most organizations interviewed were proceeding with quality improvement programmes without a well-defined quality vision or any objectives. ISO 9000 was introduced either as a result of external pressure from international competitors, or else just for prestige because some local companies have been certified for ISO 9000.
- With the current management approaches in Libyan companies, implementing quality management would prove to be a difficult challenge. The TQM philosophy simply cannot be successful with existing management structures and cultures, where members of top management are hesitant to educate themselves and become role models in leading the quality journey.
- The chronic management problems facing Libyan organizations have evolved over the past 25 years and cannot all be solved at once, and step by step improvements must be made until the major issues are resolved.
- Libyan companies have embarked on the quality journey by becoming ISO 9000 certified. The certification of ISO 9000:2000 will be a useful stepping-stone for embracing the philosophy of TQM, but running after ISO 9000 certification alone does not automatically result in an improvement of the performance of these organizations. A poor organizational structure and poorly written policies make good performance impossible. Libyan companies could benefit from ISO 9000 quality management systems to create well documented systems; these are currently very poor in most of the Libyan companies interviewed. This documentation system could play a very important role in measuring and benchmarking TQM progress in the Libyan environment.
- TQM implementation is a major change for the organization as well as the employees, who are used to traditional practices. This requires Libyan managers to be effective and successful agents of change; they must change their attitudes, educate themselves and their employees, and not rely only on

old policies written twenty five years ago. They should take note of the changes sweeping the world: the creation of the global market, the international paradigms of management that cross national boundaries, the new information revolution, the introduction of new technologies, and the shift towards customer focused strategies. Relying on old approaches and policies will not ensure that change will take place, and all efforts to implement TQM will be a waste of time and resources.

- The status quo of poor quality and poor management approaches will certainly lead to continued failure, and will probably bankrupt most of the existing companies because of the high levels of international competition that are just starting to sweep the country.
- The government should play an important role in building a quality environment by emphasizing the importance of quality for the whole country, and by enforcing legal issues to make quality well recognized by manufacturing and other sectors.

Contrary to the Libyan experience, the level of TQM implementation among the UAE organizations was found to be very mature and the quality culture was dominant at different levels of their companies. This was not a surprise because the UAE companies were among the best companies in the country and all of them had won the Dubai Quality Award, which is identical to the EFQM European model. The thesis has argued that Libyan companies can learn a lot from the experiences of UAE companies see Section (8.2.1).

The researcher found that implementation of TQM was a necessity in the Libyan context, and that it would be a worthwhile investment. If it is implemented properly, with a strong belief and commitment, TQM can definitely lead Libyan companies on their way to improvement, to achieve a quality culture, and to enable them to survive and compete in the developed market.

9.6 Recommendations for Improving Quality Initiatives in Libyan Companies

Chapter 8 highlighted important findings from the data analysis see Section (8.2). Based on those findings, necessary recommendations towards improving the quality movement in Libyan manufacturing companies and other Libyan institutions and organizations were given.

If Libyan organizations are willing to adopt and adapt TQM approaches, or any other quality management system, there are a number of steps that will be important for any organization to take:

- **Building New Culture**

Libyan companies need to shift to an entirely new management style. A vastly different approach is required, and collecting data on the current status can help a company to understand where its focus is, and will serve as a starting point for improvement, because of the poor management in Libyan companies, as was shown from the quantitative and qualitative data analysis. Leaders need to revise their organization's culture and compare it with the TQM culture to define the gaps which exist; they then have to put in place strategies to fill those gaps, and move forwards towards a TQM culture.

This is the advice of a Libyan quality expert during the interviews.

“We should admit that the way we were managing our organizations for the last 20 years is just accumulative wrong thinking and doing and gets us to nowhere. We should stop, think, and start again. We should learn from others, and move faster; faster and fasterwe are far behind.”

The proposed framework (see Sections 8.3.2 and 8.4.4), provides guidelines on how to create a quality culture as the final target of the quality journey.

- **Start with Belief and Commitment**

The TQM journey should start with a firm belief in, and commitment to, the philosophy of TQM by the top management. It requires significant changes in management philosophy and behaviors; it also requires new priorities, additional resources, energy, time and consistent support. Senior managers will not provide such backing until they are convinced that the improvement programme makes sense. Quality improvement is a continuous process and should not be thought of as something with a beginning and an end (see Section 8.4.1).

- **Awareness**

Before committing themselves, top management must thoroughly understand the principles of TQM or any other quality management system that they are looking to implement. Leaders must know how to create a vision and how to inspire people to achieve the fulfilment of the organization's objectives.

- **Training**

Awareness training is a critical first step; employees need to know how to change, or what to do differently for quality improvement to happen. Training needs to be provided in problem identification and solving skills, how to communicate effectively, and how to ensure that teamwork and decision making foster continuous improvement.

Middle managers must be well trained in implanting quality principles and tools, and must be trained as trainers and be able to cascade training to their subordinates. This involvement in training will oblige them to make the transition to quality smooth and successful.

- **Empowerment**

Employee empowerment is a new way of managing organizations towards a more complex and competitive future. A TQM strategy is deemed to fail if the empowerment of employees is absent. To be an effective organization, employees

should be given power, information, knowledge, rewards and recognition that are relevant to business performance.

- **Plans**

In order for an organization to implement TQM, or indeed any quality management system, an overall plan is required. Success does not just happen; it needs a systematic, integrated, consistent, and organization-wide approach, and this can only be achieved through total planning. Plans should specify who is responsible for achieving each result, including goals and objectives, and dates should be set for completion of each result. Responsible parties should regularly review the status of the plan. The framework proposed has introduced the core processes, the measurement, and the outputs for every phase of the implementation plan (see Sections 8.4.1, 8.4.2, 8.4.3, 8.4.4).

The Last Word

The best practice UAE companies interviewed emphasized the role of top management to bring about the changes which can achieve successful employee involvement. This is consistent with Toshio Okuno, who states:

“Lasting organizational change always requires significant change in people. Without change in human knowledge, skill, and behavior on the job, change in technology, processes, and structures is unlikely to yield long-term benefits. It is essential to focus on changing people as well as other aspects of the organization, because people make the difference in organizational performance and have ideas for productive change.” (Cooper et, al. 1995)

The Qur'an says:

{The Allah (God) will not change the condition of people as long as they do not change their state themselves} [The Qur'an: Surat 13: Ayah: 11

“It is not true, as a good many industrial psychologists assert, that human nature resists change. On the contrary, no being in heaven or earth is greedier for new things. But there are conditions for man’s readiness for change.”

(Drucker, 2002)

9.7 Study Limitations

At the design stage of the survey instrument, it was assumed that the respondents were knowledgeable enough in quality principles and quality tools to enable them to give truthful answers. During the group briefings, the researcher noted that the awareness training was mostly oriented only to ISO implementing groups, and that many of the respondents were not well acquainted with the extent to which TQM was used.

There was a clear lack of TQM literature and research available to the participants to enrich their knowledge and experience, and enable them to effectively participate in this research.

The focus of the research has been limited to the manufacturing sector, while TQM claims to provide benefits for all organizations. To produce a more refined understanding of the quality initiatives and levels of implementations nation-wide, future study should include other sectors.

9.8 Research Implications

- The proposed framework can help Libyan top management and practitioners to understand that before implementing various quality improvements, they should make sure that they actually have the knowledge, belief, resources and intention to start the improvement journey. These requirements will enable them to be a role model during the implementation of TQM and lead in the changes.
- The study showed that quality management in Libyan process and manufacturing companies is a comparatively new practice, whose implementation is hindered by many aspects of organizational structures and

cultures. Implementation of quality management requires re-evaluation of entire organization and management roles, and the acquisition of new skills by management and employees at all levels. The suggested framework, section (8.3.3) would help Libyan companies' practitioners to bridge the gap between practice and theory, and to manage the transfer of their organization from a traditional to a TQM management style. The framework could enhance new strategies (restructuring, continuous learning, management audit, 5Ss, ISO 9000, TQM) and encourage policy makers to adopt and adapt the proposed framework as a roadmap to implement quality initiatives in their organizations.

- The critical success factors and barriers to TQM in the Libyan context will be better understood and offer clear insight on the ways in which quality improvement is introduced to the Libyan companies. The results have offered insights into potential problems and issues that the organizations have to address when it comes to their quality initiatives.
- The researcher attended the annual quality conference in Libya in May 2003 and presented a paper titled *TQM as a competitive advantage for Libyan industry*. The paper was in Arabic and suggested forming a national quality committee to lead the quality campaign in the country. The proposal was accepted and approved by the Ministry of Planning, and the National Quality Committee was formed in November 2003. The researcher is now a member of the National Quality Committee in Libya.
- In Libya, there has been very little work in the area of TQM. The researcher anticipates this study would help in filling the gap and contributes to the literature of TQM in Libya. It is hoped that it will assist the students and researchers in academia in Libya to develop their knowledge in field of quality management and encourages others to replicate this study with other public and private sectors in Libya, (Education, health, banking, agriculture, community, etc.)

- The research has had a significant contribution to my personal development. I have become increasingly critical towards a number of management approaches, many of which are directly associated with TQM. I now think with a more open mind of the possibilities needed to reach the target using different approaches and diversity. This personal development will make it easier for me to provide a good input in the future to help in spreading the TQM concept in Libya, with the aim of improving my country's competency.

9.9 Future Development

From the findings in section (8.2.1) it can be seen that Libyan companies are still in the early stages of the quality journey which has necessitated huge research activities in different aspects of TQM. There was clear lack of understanding and awareness of TQM aspects, quality management techniques and tools which will provide a good research opportunity for a huge amount of future work. All the barriers to TQM implementation in the Libyan companies and the study's limitations could set the agenda for interesting future research. The following are the most pressing issues for other researchers to start with:

- The research could be replicated by other researchers in other national; sectors education, health, tourism, etc., to establish the level of quality initiatives implementation in those sectors, and to suggest potential improvements.
- Future research is needed to explore the role of top management across a range of Libyan companies in order to find out why there has been a lack of commitment and support for quality initiatives to be successful.
- Future research is needed to explore the role middle management should play in introducing any quality initiatives and how they can be the catalyst during the whole stage of implementation.

- The influence of the external environment should be studied in order to explore how the external environment affects the style of management and the capability of TQM implementation.
- The influence of cultural environment should be studied in order to see how to embed the employees' social values with company policies and practices.
- Further research is needed to explore the role of government in building quality culture and how to link it with nationwide productivity and competitiveness.
- Further studies should be conducted to compare more quality initiatives in other countries and learn from their best practices.

9.10 Summary

The conclusions in this chapter are drawn from the findings in Chapter 8, Section (8.2). Recommendations for the improvement of the quality movement in Libyan process and manufacturing companies and suggestions have been made in the light of these findings. Libyan government policy makers, the process and manufacturing sector and other sectors could benefit from the recommendations and the framework proposed by the researcher to implement the changes required for supporting the quality journey in the Libyan context, section (8.3).

This chapter has also highlighted the limitations, contributions and some suggestions for further research.

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APPENDIX A

Survey Questionnaire

TOTAL QUALITY MANAGEMENT FRAMEWORK FOR LIBYAN PROCESS AND MANUFACTURING INDUSTRIES

Survey Questionnaire

Dear Respondent

This survey forms part of My PhD research on the implementation of quality programs in Libyan manufacturing organizations. The aim is to develop an appropriate framework for TQM implementation in Libyan manufacturing organization. Towards that end, this survey will try to investigate how the critical success factors of TQM philosophy have been implemented in your organization. Please note that your participation is crucial to the survey results and the information obtained will be useful in devising suitable approaches that will benefit Libyan manufacturing organizations.

All responses given will be treated with the utmost confidence and the results will be used for research purposes only. The access to data is restricted to me and to my supervisor

After completing the attached survey, seal it in the envelope provided and return it to the training department, within two week from the date which the survey been handed to you.

For any enquires a bout the survey you can contact me on the following No:

00218 21 360 1170 E-mail S.b.youssef.1999@cranfield.ac.uk

Thanks for your participation

The Questionnaire Instructions

Dir Respondent

- Please select answers based upon your own opinion and experiences.
- Please read each statement and base your response on how things actually in your organization, not how would you like them to be.
- When you finish the questionnaire, please put in the provided envelope and get it back to training department in your organization.

For each of the following statement, please indicate the extent to which your organization practices the statement by choosing the right scale from (1) to (10).

Where:

The scale from (1 to <4) represents a low level of implementation, from (4 to <7) medium level of implementation and from (7 to 10) a high level of implementation of TQM critical success factors.

Questionnaire Scale

Low implementation				High implementation					
low implementation				Medium implementation			High implementation		
1	2	3	4	5	6	7	8	9	10

Please see next pages to proceed filling the questionnaire

Section A

1

Top Management Commitment (TMC)

The statements below are about the involvement of the top management in your organization to support the implementation of quality programs. They include Top management's vision of the organization's future, and hence the setting of objectives, deploying them to the workforce, providing the incentives and resources to realize these objectives.

Please Indicate the Extent to Which

Very little Very much

Q01	Top management involves major department heads and managers in determining long-term objectives.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q02	Top management extends its interesting meeting with their employees to explain the organization policies and objectives.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q03	Employees know the overall organization's purpose.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q04	Employees participate in setting the organization objectives.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q05	Top management reviews its policies to ensure its adherence to the set objectives of the organization .	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q06	Top management uses performance indicators to ensure adequate performance and quality improvement.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q07	Top management shows interest in quality improvement processes.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q08	Top management provides necessary resources to fulfil overall organization objectives	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

This set of statements is about "Customer Focus" in your organization. It is the degree to which the organization determines requirements and expectations of customers and how they are being met by the way the organization's products and services are designed and produced.

Please indicate The extent to which

Very little Very much

Q09	Considerations of customer situation are taken into account when setting strategies for the organization?	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q10	The organization determines current and future customer requirements and expectation.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q11	The organization uses information from customer services in improving its processes and services.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q12	The organization encourages employees to satisfy customers (Internal-External).	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q13	The organization's quality department ensures that customer complaints are dealt with to the customer satisfaction.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

This set of statements is about “Process Management” in your organization. Process management is the set of technical and behavioral practices emphasizing the actions, rather than results.

Please indicate The extent to which

Very little Very much

Q14	The organization provides relevant measurements to cover the key processes in the organization.	1 2 3 4 5 6 7 8 9 10 □ □ □ □ □ □ □ □ □ □
Q15	The organization uses clear working procedures and instruction.	1 2 3 4 5 6 7 8 9 10 □ □ □ □ □ □ □ □ □ □
Q16	The organization uses tactical techniques for process analysis, control and improvement.	1 2 3 4 5 6 7 8 9 10 □ □ □ □ □ □ □ □ □ □
Q17	The organization makes clear efforts to reduce waste (i.e. Rework, returns & time)	1 2 3 4 5 6 7 8 9 10 □ □ □ □ □ □ □ □ □ □
Q18	The organization uses teams in analyzing processes for improvement.	1 2 3 4 5 6 7 8 9 10 □ □ □ □ □ □ □ □ □ □
Q19	The organization calibrates measuring and monitoring devices, in regular intervals, to ensure its accuracy.	1 2 3 4 5 6 7 8 9 10 □ □ □ □ □ □ □ □ □ □
Q20	The organization keeps its sites neat and clean at all times.	1 2 3 4 5 6 7 8 9 10 □ □ □ □ □ □ □ □ □ □
Q21	The organization relays on the recommendations of studies and research for improving its products and services.	1 2 3 4 5 6 7 8 9 10 □ □ □ □ □ □ □ □ □ □

These statements are about “Training and Development” in your organization. Training is the organization’s capability to recognize and support the development of its employees in the fields of knowledge, skill and attitude.

Please Indicate the Extent to Which

Very little Very much

Q22	. Training is determined according to actual needs that have to be covered by training.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q23	Managers and supervisors are involved in determining training needs of the employees under their supervision.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q24	resources are available to cover employees training needs and development.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q25	Modern training methods are used in your organization (ie. Distance learning, C.B.T, e-learning.)	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q26	The organization uses it’s facilities and expertise to conduct on the job training.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q27	The organization evaluates training output.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q28	The organization keeps training records as guide for farther training and development.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

This set of statements is about "Employees Involvement" in your organization. People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.

Please Indicate The Extent to Which:

Very little Very much

Q29	The organization encourages employees to suggest ideas for work improvement.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q30	Employee's suggestions are implemented.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q31	The organization encourages employees to report work problems.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q32	Cross-functional teams are used to solve organization problems	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q33	The organization provides lines of communication between the various activities within the organization.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q34	The organization provide safe and clean working environment	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q35	Work responsibilities are delegated to the employees.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q36	The organization conduct a surveys or other feed back techniques to measure employees satisfaction.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q37	Motivation system and recognition are part of the organization policies and conduct.	

These statements are about "Quality Data and Measurements" in your organization. Based on the analysis of these data and other information, effective decisions are taken for the improvement of the organization business.

Please Indicate The Extent to Which:

Very little Very much

Q38	Information is used to make decisions in the organization.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q39	The organization has a performance measurement system that evaluates the quality of its processes.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q40	The organization standards and performance indicators are compared with international standards.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q41	The organization uses information and performance measurements in the improvement of its processes and services.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q42	Information is reliable: precise, comprehensive and clear.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

These statements are about Supplier Relationship with your organization. The organization and its suppliers are interdependent and mutually beneficial enhancing the ability of both to create value

Please Indicate The Extent to Which:

Very little Very much

Q43	Suppliers are selected based on quality rather than price.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q44	The organization establishes long-term relationship with suppliers.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q45	The organization ensures the quality of supplies before delivery.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q46	The organization conducts supplier quality audit.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q47	The organization shares the information on production processes with the supplier	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

This set of statements is about "Continuous Improvement" in your organization. The continuous improvement of the organization's overall performance should be a permanent objective of the organization.

Pleas Indicate The Extent to Which:

Very little Very much

Q48	Key processes are regularly reviewed to see if they can be improved.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q49	Quality problem solving methods are used such as: Quality improvement Teams, Quality Circles, self-assessment and internal auditing.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q50	The organization uses benchmarking to identify the needs for change.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q51	The organization promotes innovation.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q52	Quality improvement culture spreads across the organization's departments.	1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Section (B)

What quality management methods or techniques do your organization implementing?

- 1 - There is no specific quality approach in place..... ☐
- 2 - ISO 9001/2000 only..... ☐
- 3- ISO 14000..... ☐
- 4 – ISO 9000 Plus Total Quality Management ☐
- 5- Total Quality management ☐
- 6 - Benchmarking..... ☐
- 7 - Re-engineering..... ☐
- 8- Six Sigma..... ☐
- 9- Quality Award..... ☐
- 10- Other..... ☐

.....

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Section C

The following items are for statistical information only.

What is your organization Name?

.....
.....

Business Category

General Industry ☐

Oil Industry ☐

Other ☐

Size of your organization (No. of employees)

Less than 500 ☐

from 500-1000 ☐

More than 1000 ☐

Your Age

20-30 ☐

31-40 ☐

41-50 ☐

51-60. ☐

Over 60 ☐

Your Qualification

Below secondary school ☐

Secondary Certificate or equivalent ☐

Baccalaureate ☐

Higher Studies ☐

Your current position

Top management ☐

Middle management ☐

Supervision ☐

Other ☐

Number of years of Experience

5-10 years

☐

11-15 years

☐

16-20 years

☐

21-25 years

☐

26-30 years

☐

more

☐

Number of years of your Personal involvement in Quality management

None ☐

1-3 years ☐

4-7 years ☐

8-10 years ☐

If you would like to make any further comments or suggestions please use the space below:

.....
.....
.....
.....
.....
.....
.....
.....
.....

Please indicate whether you would like to participate in the future stage of this research?

Yes ☐

No ☐

If "yes " please write:

Your name.....

Your telephone number.....

Your fax.....

Your Email.....

Thanks for your participation

APPENDIX B

INTERVIEW GUIDE

APPENDIX B: INTERVIEW GUIDE

SEMI-STRUCTURED INTERVIEWS

Interview guide

This guide lists a pre-determined set of questions or issues that are to be explored during an interview. This guide serves as a road map and checklist during the interview and ensures that basically the same information is obtained from the interviewees in Libyan companies and UAE companies.

APPENDIX B: INTERVIEW GUIDE

Interview Date:

Name of Organization:

Name of Participant

Phone:

Email:

Position/Title:

Introduction:

Good Morning/Afternoon. My name isFrom **Cranfield University** and I am conducting this interview as part of my PhD's thesis: "Total Quality Management Framework in Libyan process and manufacturing industry"

This morning/afternoon I would like to talk to you about your perception of your organization's implementation of Total Quality Management or any other quality management systems intruded in your organisation.

This interview is completely voluntary and confidential if at any time you would rather not answer a question please say so. The information will be used for a report but I will not include your name.

The interview should last about **60-75** minutes and with your permission will be taped. With your agreement I will proceed with the interview.

Part A Easy Start

Q1. What does the word "Quality" means to you?

.....
.....
.....
.....

Q2. What is the story of quality program in your organisation ...? How did it happen?? How is it now??

.....
.....
.....
.....
.....
.....
.....

Q3. Has your organisation installed a formal quality management program

Not planed <input type="radio"/>	in preparation <input type="radio"/>	already implemented <input type="radio"/>
----------------------------------	--------------------------------------	---

.....
.....
.....

Q4. When was Quality management introduced?

--	--	--	--

(Year)

.....
.....

Q5 Which quality Techniques has your organisation used to drive improvement?

- | | |
|---|--|
| <input type="checkbox"/> TQM | <input type="checkbox"/> Six sigma |
| <input type="checkbox"/> ISO- series | <input type="checkbox"/> reengineering |
| <input type="checkbox"/> Benchmarking | <input type="checkbox"/> 5S's |
| <input type="checkbox"/> National Quality award | |
| Other (specify) | |

.....

Q6. What are the reasons for implementing quality management?

- 1
- 2
- 3
- 4
- 5

Rank

☐
☐
☐
☐
☐

.....

.....

Q7. What are the benefits your organization gain with implementing your quality program

Improve productivity ☐

Lower stock level ☐

Improve Image ☐

Reduce complaints ☐

Reduce return ☐

Improve product reliability ☐

Improve moral ☐

Less paper ☐

Less waste ☐

Less rework ☐

Reduce cost ☐

Increase market share ☐

Clear roles ☐

Flatter organization ☐

Lower stock level ☐

Improve product Durability ☐

Lower staff turnover ☐

Better Teamwork ☐

.....

.....

.....

Q8. Difficulties Faced by your organization in the Improvement of Quality

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

Rank

☐
☐
☐
☐
☐

- Lack of top management ☐
- Commitment ☐
- Attitude of middle management ☐
- Lack of infrastructure ☐
- Lack of resources ☐
- Lack of training ☐
- Govt Policies ☐

- ☐ Customer awareness
- ☐ Corporate culture
- ☐ Technical constraints
- ☐ Vendor capability
- ☐ Lack of motivation
- ☐ Social Culture
- ☐ Informal organisation

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Part B TQM Themes

Factor 1: Top Management Commitment

Q9. Does your organisation has clear vision statement

Yes ☐ No ☐

Q10. What is the vision statement of your organisation?

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.....

.....

Q11. Does your organisation as a whole have and agreed strategy for quality management?

.....
.....
.....
.....

Q12. Does your organisation has clear mission statement

Yes ☐

No ☐

Q13 What is the mission statement of your organisation

.....
.....
.....

Q14. Is the vision and mission statement communicated to all employees?

Yes ☐

No ☐

How ?

.....
.....
.....

Q15 Does your organisation have a quality policy?

Yes

No

.....

Q16. If yes to the question above how is quality policy communicated to lower levels

.....
.....
.....
.....

Q17. Who is responsible for driving improvement in your organisation?

Government policy.....☐

Senior management.....☐

- Quality Department.....☐
- Customers.....☐
- Staff.....☐
- Other.....☐
- None of these.....☐

.....

.....

.....

Q 18 To the what extent does the top management committed to quality issues

Top management assumes responsibility.....

For quality performance

.....

.....

.....

Major department heads participate in

Quality improvement process

.....

.....

.....

Top management discuss main quality Issues in top management meetings

.....

.....

.....

19. Quality infrastructure

Does your company have a quality steering group to oversee the quality policy and implementation?

.....

.....

.....

To what extent resources are available to support company strategies??

.....

.....

.....

.....

Factor 2 :

Customer Focus

Q20 How is customer demand collected and fallowed up?

.....
.....
.....

Q21 How often do you survey your customers ?

Not at all ☐ every year ☐ every six months ☐

.....
.....

Q22. How do you measure customer satisfaction?

- ☐ Not measured
- ☐ Questionnaire Surveys
- ☐ By the number of complaints
- ☐ Other methods.....

.....
.....

Q23. How your organisation deals with customer complaints

.....
.....
.....
.....

Q24. How important is 3rd Party Certification to customers and is it a contractual requirement?’

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.....
.....
.....

Factor 3:

Process Management

Q25. Does the organisation uses clear working procedures and instruction

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.....

Q26. Does the organisation identify the appropriate performance indicators which related to critical success factors for business process

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Q27. To what extent does your organisation uses teams in analysing processes for improvement

.....
.....
.....
.....
.....

Q28. Does the organization make clear efforts to reduce waste (rework, return, scrap, time?)

.....
.....

Q29. Any measurable targets

.....
.....
.....
.....
.....

Q30. To what extent does your organisation use Quality Tools?

- | | | |
|------------------|--------------------------|---|
| Flow charts, | <input type="checkbox"/> | <input type="checkbox"/> Cause and-effect diagrams, |
| Brainstorming | <input type="checkbox"/> | <input type="checkbox"/> PDCA cycle |
| Scatter diagrams | <input type="checkbox"/> | <input type="checkbox"/> Control charts, |
| Pareto charts | <input type="checkbox"/> | <input type="checkbox"/> Affinity diagrams, |
| Sampling | <input type="checkbox"/> | <input type="checkbox"/> Run Charts |
| Histograms | <input type="checkbox"/> | <input type="checkbox"/> None of these |

Others (specify)

.....
.....
.....

Q31 Does your organisation applies statistical process control?

Yes ☐

No ☐

.....
.....

Why not

.....
.....
.....
.....

Factor 4 :

Training And Development

Q32. What is the role of managers and supervisor in training activities in their departments?

.....
.....
.....
.....

Q33. What percentage of staff have received awareness training in quality management

100%

75%

50%

25%

0%

How many days per year do the following personnel spend on formal training

Top management ☐

Middle management ☐

Supervisor ☐

Operators ☐

.....
.....
.....

Q34. How is training effectiveness evaluated?

.....
.....
.....

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.....
.....
Q35. Are there enough resources available for employees training in quality management?

Factor 5:	Employee's Participation
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Is there any utilisation of suggestion system?

.....
.....
.....
What is the average number of suggestions/ employee/year?

.....
.....
.....
What is the percentage of suggestions approved by management?

.....
.....
.....
What are the benefits achieved from suggestion system

Product quality, Lead time; Work in progress; Customer satisfaction;
Communication,
business control; Employee moral;

.....
.....
.....
Is there is utilisation of teams that engage in problem solving and continuous improvement

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.....
.....
Are the teams properly trained in problem analysis and solving?

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.....
Does the organisation provide lines of communication between various activities within the organisation

Organisation standards are revised on a regular basis using the data collected.

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.....

how the organisation audits it's activities

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.....
.....
.....

Factor 7:	Supplier Quality Management
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Are you satisfied with supplier quality? If not, give areas of dissatisfaction.'

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.....

Please rank the importance of the basis for selection you suppliers. (1 being the most important)

Price

Quality

Product process

Capability

Past performance

'How do you ensure the quality of goods/ services from your suppliers?'

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.....
.....

What are the 3 most important outstanding problems with your suppliers?'

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.....
.....

to what extent is information on production process shared between you and your suppliers?

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.....
.....

Factor 8:	Continuous Improvement
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Does your organisation have a quality improvement program

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Quality improvement culture spreads across the organization's department

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Key process are regularly reviewed to see if they can be improved

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.....

The organisation uses benchmarking to identify the needs for change

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.....

resources are provided to implement the suggested improvement

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.....
.....

The organisation promotes innovations

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.....

Over all picture

Has your organisation used benchmarking to identify improvement opportunity?

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.....

Process

best practices

Financial

External

Man power

Quality tools

Other (specify)

Do you think the quality of your organisation has changed positively after introducing the quality projects?

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.....
.....

How Would You Rate the Overall Success of Your Quality Management Programme to Date?.....

.....
.....

The extent to which organisation extends its quality commitment to the external community.

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.....
.....

Are there topics you feel are not covered

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.....
.....

Is there any person you think I should talk to about these issues?

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.....
.....

Confirm Confidentiality!!

Thanks.....